

HEARING  
BEFORE THE  
CALIFORNIA ENERGY RESOURCES CONSERVATION  
AND DEVELOPMENT COMMISSION

In the Matter of: )  
 )  
AB 970 BUILDING ENERGY )  
EFFICIENCY STANDARDS )  
----- )

CALIFORNIA ENERGY COMMISSION  
1516 NINTH STREET  
HEARING ROOM A  
SACRAMENTO, CALIFORNIA

TUESDAY, NOVEMBER 28, 2000

10:05 A.M.

Reported by:  
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PETERS SHORTHAND REPORTING CORPORATION (916) 362-2345

COMMISSIONERS PRESENT

Robert Pernell, Presiding Member, Energy  
Efficiency Committee

Arthur Rosenfeld, Associate Member, Energy  
Efficiency Committee

STAFF PRESENT

Rosella Shapiro, Advisor

John Wilson, Advisor

Dick Ratliff

Donald B. Kazama

William Pennington

Scott Matthews

Jon Leber

Tony Rygg

Bryan Alcorn

Maziar Shirakh

Gary Flamm

Nelson Pena

Rob Hudler

Dale Trenchel

ALSO PRESENT

Noah Horowitz  
David Goldstein  
Natural Resources Defense Council

Thomas L. Trimberger  
Public Works Agency  
Building Inspection Division  
County of Sacramento  
representing California Building Officials

ALSO PRESENT

Robert Fiock  
William Douglas Hoffner  
California Building Officials

James E. Larsen  
Garrett Stone  
Cardinal IG

Ron Parker, Plant Manager  
Cardinal CG

Robert A. Zogg  
Arthur D. Little

Charles Segerstrom  
Pacific Gas and Electric Company

Mike Gabel  
Gabel Associates

Martyn C. Dodd  
Gabel Dodd Energy Soft

Eric Eilar  
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California Building Industry Association  
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Dee Anne Ross  
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Mark Modera  
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Gary Farber  
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Farber Energy Design

Gary Fernstrom  
Marshall Hunt  
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Douglas Mahone  
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Ken Nittler  
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Michael G. Hodgson  
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Bruce A. Wilcox  
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John Proctor  
Proctor Engineering Group

Charles Eley  
Eley Associates

David Ware  
Owens Corning

A.Y. Ahmed  
Occidental Analytical Group

Ray Bjerrum  
Merzon Industries

Britton McFetridge  
Legislative and Regulatory Affairs

Rick Wallace  
Energy Consultant

## ALSO PRESENT

Robert Burt  
Insulation Contractors Association

Steve Taylor  
Mark Hydeman  
Taylor Engineering

Patrick Eilert  
Pacific Gas and Electric Company

Joseph Mattingly  
Gas Appliance Manufacturers Association

Robert Wisbey  
National Electrical Manufacturers Association

Robert Burt  
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Rick Wylie  
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Doug Bishop  
Carrier Corporation

Lake Coulson  
Air Conditioning and Refrigeration Institute

Kyle Gilley  
Lennox International

Jim Mattesich  
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Blomberg Window Systems

John Hogan  
Department of Design, Construction and Land Use,  
City of Seattle

Randall Higa  
Southern California Gas Company

Chip Fox  
San Diego Gas and Electric

ALSO PRESENT

Leslie Williams  
Building Standards

Kurt Cooknick  
AIACC

Lance DeLaura  
Southern California Gas Company

James O'Bannon  
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Judith Kelley  
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Charles F. Segerstrom  
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Gregg D. Ander  
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Howard B. Mason  
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ALSO PRESENT

W.G. "Gerry" Foote  
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Robert A. Scott  
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Jeff Chapman  
California Living and Energy

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Wallace C. Kolberg  
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Dr. Vilas Mujumdar  
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Charlie Meecher  
Blomberg Window Systems

Maurice Reed,  
Sacramento Building and Construction Trades  
Council

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1 P R O C E E D I N G S

2 10:00 a.m.

3 PRESIDING MEMBER PERNELL: Good morning,  
4 and thank you all for coming. Welcome to the  
5 Committee hearing for the draft AB-970 Building  
6 Energy Efficiency Standards.

7 My name is Robert Pernell; I am the  
8 Presiding Member of the Energy Efficiency  
9 Committee. To my left is Commissioner Rosenfeld,  
10 who is also a Member of the Committee.

11 The Commission is made up of five  
12 Commissioners, two Commissioners serve on each  
13 Committee. Commissioner Rosenfeld and myself are  
14 on the Energy Efficiency Committee.

15 To Commissioner Rosenfeld's left is his  
16 Advisor, John Wilson. And to my right is my  
17 Advisor, --

18 MS. SHAPIRO: Rosella Shapiro.

19 (Laughter.)

20 PRESIDING MEMBER PERNELL: -- Rosella.

21 (Parties speaking simultaneously.)

22 PRESIDING MEMBER PERNELL: Who, by the  
23 way, worked late last night, and always does an  
24 excellent job.

25 As most of you know AB-970 was signed by

1 the Governor September 6th of this year. AB-970  
2 did a number of things to address California's  
3 energy needs in the near term, as well as in the  
4 future.

5 Among those the bill gave the Energy  
6 Commission 120 days to adopt and implement updated  
7 and cost effective building efficiency standards.  
8 Standards that insured the maximum feasible  
9 reduction and wasteful, uneconomic, inefficient or  
10 unnecessary consumption of electricity.

11 One of the reasons we're here today is  
12 the Commission is conducting an expedited  
13 rulemaking process to consider amendments to the  
14 building standards per AB-970.

15 There will be revisions in both the  
16 residential and nonresidential building standards.  
17 Staff and its contractors have drafted new  
18 building standards. We want to hear from the  
19 public, receive public comment on those draft  
20 standards.

21 So staff will make a brief presentation,  
22 but the focus of this hearing is to receive and  
23 understand your comments on the proposed  
24 standards. So please make your comments as brief  
25 as possible. If someone has already addressed

1 your concerns, you can get up and say ditto, or I  
2 agree with them, and then please be seated.

3 We will first do the residential  
4 proposed standards, and then after lunch we will  
5 do the nonresidential standards.

6 Again, we want to hear from you. We  
7 don't want to be redundant, but there's a lot to  
8 do today, a lot to cover. I intend to finish this  
9 Committee hearing today in the p.m.

10 So, with that I'd like to allow  
11 Commissioner Rosenfeld and see whether or not he  
12 has any comments on the proceedings.

13 COMMISSIONER ROSENFELD: No comments.

14 PRESIDING MEMBER PERNELL: No comments.

15 I also want to introduce Dick Ratliff, who is our  
16 legal counsel, and Bill Pennington, who will be  
17 conducting the hearing today. Mr. Pennington is,  
18 raise your hand, Bill. Everybody probably knows  
19 Bill, you've been on the phone with him and, you  
20 know, chewed his ear off.

21 So, with that, unless there is anything  
22 else from the dais, I'll turn the hearing over to  
23 Mr. Pennington.

24 MR. PENNINGTON: Thank you,  
25 Commissioner. Just at the outset, I'd like to

1       introduce to my left, Jon Leber, who's the  
2       Commission's Senior Engineer. And also Don  
3       Kazama, who is the Project Administrator for the  
4       AB-970 project.

5               There are several other Commission Staff  
6       in the audience here, who perhaps from time to  
7       time might have something important to say related  
8       to comments. And so they may come up from time to  
9       time.

10              In terms of housekeeping I'd like to  
11       point out that there are copies out front of all  
12       the documents that were made available through the  
13       Commission's website. And hopefully most of you  
14       already had gotten those before you came to the  
15       meeting today. There's extra copies there.

16              In addition there are some documents,  
17       there are some things that have not previously  
18       been made available through the website, and that  
19       includes copies of the agenda, a recently  
20       completed contractor report on the compliance  
21       costs for production builders, and an errata to  
22       the residential and nonresidential reports.

23              There's a sign-in sheet out there. If  
24       anyone hasn't signed in, please sign in. You can  
25       just staple your business card to it instead of

1       filling out, you know, all the information. Try  
2       to make it easy for you. But we'd like to know  
3       who is here.

4               If you want to speak you need to fill  
5       out a blue card, so if anyone hasn't filled out a  
6       blue card that wants to speak, they need to do  
7       that. Please indicate on the blue card whether  
8       your comments relate to the residential standards  
9       or the nonresidential standards, or to the whole  
10      set of the standards, or to some specific aspect  
11      of the standards.

12              We appreciate some clarity on focusing  
13      on what you want to speak about. And those blue  
14      cards will be used by the Committee to call people  
15      up to speak.

16              Obviously we've got a lot of people here  
17      and a very short timeframe, so we're planning to  
18      have speakers limited to five minutes. So you  
19      need to try to reduce whatever comments you have  
20      to five minutes. And we will be monitoring your  
21      time and will prompt you when you're getting to  
22      one minute left kind of thing.

23              If you have any slides that you'd like  
24      us to project for you, Dale Trenchel will be  
25      helping with that. And if you could give him a

1 floppy disk with whatever your slide is, or  
2 slides, we can help you.

3 When you come up to speak please make  
4 sure you give a business card to the recorder.  
5 And also, please speak directly into the  
6 microphones, which is something I always fail to  
7 do.

8 This morning we're going to be focusing  
9 on the draft residential standards. If you want  
10 to speak only on the draft nonresidential  
11 standards, you have the option of going across the  
12 atrium to Hearing Room B. The hearing's being  
13 piped in over there, so if you want to conduct  
14 some business, you want to work on stuff, make use  
15 of your morning time, feel free to do that.

16 Please recognize that if you do leave  
17 that the times on the agenda are just rough times,  
18 and you know, don't count on you can come back  
19 specifically at that time and everything will work  
20 out hunky-dory. We may be a little later or a  
21 little earlier on the agenda.

22 Okay, with that I'd like to introduce  
23 the contractors who have developed the draft  
24 residential standards. They are Mr. Bruce Wilcox  
25 of the Berkeley Solar Group; Mr. Ken Nittler of

1 Enercomp; Mr. John Proctor of Proctor Engineer;  
2 Mr. Mark Modera, who is not here yet I guess, of  
3 Lawrence Berkeley National Lab and AeroSeal; and  
4 Ms. Dee Anne Ross of DAREnergy Consulting.

5 So with that I'd like to turn this over  
6 to Bruce.

7 MR. WILCOX: Thank you, Bill. We're  
8 going to present a very brief overview of our  
9 proposed changes to the standards. And we're  
10 going to then focus on a couple of the issues that  
11 we think are significant and people might need  
12 some explanation.

13 And then we're going to make this pretty  
14 brief so we can leave most of the time for  
15 comments from you and questions, if there are any.

16 So, Bill just introduced the team.  
17 That's who we are. Let's have the next slide,  
18 please.

19 This is table 1 from the summary  
20 document, if you picked up your copies of the  
21 document. What this is is a summary of the  
22 proposed changes to the standards.

23 So, what this shows is that -- the 16  
24 California climate zones are down in the left-hand  
25 column, and for each climate zone what it shows

1 are the changes in the prescriptive standards that  
2 we're proposing.

3 And so you can see that in climate zone  
4 1, which is the north coast cold climate zone, the  
5 only change is a proposal to do required duct  
6 sealing.

7 And that same proposal is true of  
8 climate zone 1, climate zone 3, climate zone 5, 6,  
9 and climate zone 16, which are basically heating  
10 dominated climate zones and AB-970 requirements  
11 are much more cooling oriented, so the duct  
12 sealing is the only change in the requirements for  
13 those.

14 In climate zones 2, 4, 7 through 15,  
15 those are the climate zones that are traditionally  
16 have significant cooling loads. Most of the new  
17 homes have air conditioners or capability of air  
18 conditioners, and those contribute significantly  
19 to the peak energy use of the state.

20 So we focused our efforts on those  
21 zones, and on cooling peak reduction measures.  
22 And the requirements are for a radiant barrier.  
23 I'll talk about those in a minute.

24 And those are required in climate zones  
25 2 and 4 and climate zones 8 through 15. A



1 fenestration U value of .65, and those are in  
2 climate zones 2, 4, 7 through 15.

3 Solar heat gain coefficient of .40 in  
4 those same zones. And a TXV, or thermostatic  
5 expansion valve on the air conditioner in climate  
6 zones 2, and then 8 through 15.

7 Next slide. So what are these measures?  
8 A radiant barrier is a device that reduces the  
9 heat gain from the roof into the attic and into  
10 the house and the duct system in the attic.

11 There has been an optional capability  
12 for taking credit for radiant barriers in the  
13 alternative compliance methods for about ten years  
14 now. And what we've done is shown that radiant  
15 barrier is cost effective in these climate zones,  
16 and have moved that already developed compliance  
17 option into the prescriptive packages.

18 For fenestration the basic requirement  
19 is a U of 0.65 and a solar heat gain coefficient  
20 of 0.40. Now there are two changes here. The  
21 current requirements have solar heat gain  
22 coefficient requirements that vary by orientation.  
23 But this proposal is for a solar heat gain  
24 coefficient of .40 in those climates on all  
25 orientations.

1                   That's based on the fact that most  
2           builders use the uniform glazing systems on all  
3           four orientations, and rotate their houses in any  
4           orientation in their subdivisions.

5                   This glazing system is a selective  
6           transmission low solar, low E product. And it's  
7           assumed to be done in an aluminum frame. So it's  
8           a change in the glazing system from what's  
9           currently required, but not a change in the frame  
10          system.

11                  Duct ceiling, the CEC adopted a duct  
12          ceiling compliance option as part of the '98  
13          standards. We're moving that compliance option  
14          with very minor editorial changes into the  
15          prescriptive standards and requiring it in all the  
16          climate zones.

17                  As in the current ACM approach, this  
18          requires field verification -- as a new measure  
19          which improves the efficiency of air conditioners,  
20          and we're going to talk a little bit more detail  
21          about that in a couple minutes.

22                  In order to provide builders with an  
23          option for -- so this is table 2 from the summary  
24          document volume one. This shows the alternative  
25          packages which were developed in order to provide

1       builders with a compliance option that did not  
2       require post-construction verification.

3               The duct ceiling and TXV both require  
4       independent third-party person come out and verify  
5       that those measures were installed correctly  
6       according to a system that requires statistical  
7       sampling and so forth.

8               If a builder doesn't want to do that, or  
9       those people aren't available, we developed this  
10      alternative package which allows compliance with  
11      the new standards prescriptively without any post  
12      construction verification.

13              And it includes higher levels of SEER,  
14      and furnace efficiency in selected zones, and  
15      requires a lower U factor window, and a lower  
16      solar heat gain coefficient in climate zones 14  
17      and 15 which have the most severe cooling  
18      climates.

19              Next slide. There are several  
20      compliance modeling changes which I'm going to  
21      mention briefly. There will no longer be credit  
22      for interior shading devices in the ACM  
23      performance calculations. And we have proposed a  
24      change in the way that central air conditioner  
25      efficiency is treated in calculating the annual

1 energy consumption in source energy. Again, we're  
2 going to talk about that more in a minute.

3 There are new compliance options. We  
4 have an optional capability -- not an optional  
5 capability, but a provision for people to use low  
6 solar heat gain roof systems. And to do those in  
7 the performance method. This is coupled with a  
8 future requirement for certification by an outside  
9 certification agency, and so forth.

10 We also have extended the duct  
11 efficiency calculations and testing system to  
12 multifamily buildings, which is a fairly  
13 straightforward extension of a system that's been  
14 in place for a single family.

15 There are also miscellaneous mandatory  
16 and procedural changes which I'm not going to go  
17 into in detail, but they're discussed in the  
18 report.

19 Next slide. So, what does this package  
20 of proposed changes achieve. Table 3 of the  
21 summary document shows the savings in total source  
22 kBtus for heating, cooling and total by climate  
23 zone. And an overall statewide average source  
24 kBtu savings per house is about 5.3 kBtu per  
25 square foot, about 12 percent of the total.

1                   If you look at this from a traditional  
2           energy units terms, in terms of therms, on the  
3           average we're saving 12 therms per house. And  
4           about 1145 kilowatt hours. And on the average,  
5           about 1.7 peak kilowatts.

6                   Next slide. If you take that same set  
7           of data and extend it to look for a statewide  
8           energy savings, one of the factors that comes into  
9           play is the number of houses that are built in  
10          each of the climate zones.

11                  So the first set of columns in this  
12          slide shows the estimate by the construction  
13          industry research board for 1998, showing the  
14          fraction of new homes built in each of the 16  
15          California climate zones.

16                  The largest number are built in climate  
17          zone 12, which is where we are right now. And  
18          very small numbers in climate zone 1 and so forth.

19                  Assuming that there are 109,000 single  
20          family houses being built, we've estimated the  
21          number of houses in each climate zone, and then  
22          using the energy savings for the typical house in  
23          those climate zones, we've estimated the savings  
24          in natural gas and it's the large number that's on  
25          there. Megawatt hours, another large number on

1       there. And kilowatts on peak, and that number is  
2       155 megawatts.

3               That 155-megawatt number includes a  
4       factor for diversity and behavior that assumes  
5       that not all the air conditioners are actually  
6       going to be running on peak at the same time.

7               Next slide, please. The cost of this  
8       package of measures is estimated on, again,  
9       another table with climate zones down the left-  
10      hand side. And the measured costs range from \$300  
11      in the climates zones where we're estimating that  
12      only duct ceiling happens, up to \$1100 in the  
13      climate zones where we have the full-on package of  
14      cooling measures.

15              And then we've also included in the  
16      third column a credit for those climate zones  
17      where reducing the peak cooling load  
18      significantly, and we assume that air conditioners  
19      will be installed for a credit against the first  
20      cost of a smaller air conditioner that is now  
21      justified using standard industry calculations.

22              So the net first cost in the next column  
23      over is the measured cost minus the air  
24      conditioning savings. And that ranges from a high  
25      of \$644 in climate zone 8, down to very close to

1       zero in some of the climate zones where we have  
2       large peak savings. And the average is \$339 per  
3       house.

4               Although we've taken this credit for air  
5       conditioner size savings in this table and in some  
6       of the calculations, note that the measures are  
7       still cost effective without the air conditioner  
8       savings in the equation in almost every case,  
9       under almost any set of assumptions.

10              We put them in this summary because we  
11       think it's very important to focus for AB-970 on  
12       the peak performance of these houses. And part of  
13       that relates to the air conditioning that's needed  
14       to be installed to handle the peak conditions.

15              And we think that if you put in a set of  
16       measures that reduces the peak air conditioning  
17       demand, the builder puts in a smaller system, the  
18       home buyer gets a system that -- a house that  
19       costs less, the utilities get a lower peak demand,  
20       and everybody wins.

21              And that's the real goal we're after  
22       here. So that's why we included this.

23              Next slide. Life cycle cost here, I'm  
24       not going to go into the details of this, but the  
25       way the legislation for the standards says that we

1       need to show that measures proposed are cost  
2       effective. The definition for cost effectiveness  
3       is that if you take the first cost of the measures  
4       and you subtract the present value of the energy  
5       savings over the life of the measures, and  
6       subtract the -- and that's both gas and  
7       electricity. If that number comes out positive  
8       then it's cost effective -- I'm sorry, if it comes  
9       out negative then it's cost effective.

10               So, basically you have to save enough  
11       energy to make up for the first cost.

12               One of the issues involved there is  
13       the -- well, all of those are issues. What is the  
14       cost of energy. And there are a range of  
15       estimates of cost of energy, and so we've done our  
16       analysis with alternative energy cost estimates to  
17       look at the sensitivity to that.

18               The Energy Commission has used a value  
19       or an approach which uses an average statewide  
20       cost of electricity, and given the latest version  
21       of their forecast, that comes out to be 30-year  
22       net present value is \$2.07 per kilowatt hour  
23       saved. \$13.27 for a therm of gas.

24               However, there's been a lot of interest  
25       in this area, and various activities going on



1 including the Public Utilities Commission  
2 Administrative Law Judge who recently issued a  
3 ruling directing utilities to use a different  
4 approach in their program analysis.

5 And that weighted peak demand and on-  
6 peak energy use much higher than the Energy  
7 Commission's forecast, and had a higher future  
8 value for estimated energy values.

9 And if you take those numbers, then the  
10 range of electricity cost is between \$2.20 and \$4  
11 per kilowatt hour net present value. And  
12 depending on which climate zone and how much of  
13 the energy is used on peak for air conditioning,  
14 and so forth.

15 So we've done our life cycle cost  
16 calculations at those two values, and also at  
17 another value that's intermediate, where rather  
18 than the Public Utilities Commission forecast, we  
19 used the Energy Commission's forecast and  
20 calculate block rates.

21 Next slide, please. We've also used a  
22 range of costs to look at the sensitivity of the  
23 answers and what's cost effective; to look at  
24 sensitivity of the first cost estimates for these  
25 measures.

1                   And if you look at the table it shows  
2                   that for low solar, low E glass per square foot  
3                   cost, we've looked at a range of costs of \$1 to \$3  
4                   per square foot additional. And based on our  
5                   understanding of what the cost to the owner is  
6                   going to be, for most houses, we've used \$1.50 a  
7                   square foot as the threshold value, below which  
8                   the measure is cost effective. And that's what  
9                   the decision to put them in the package is based  
10                  on that \$1.50 a square foot.

11                  Although if you look at the detailed  
12                  analysis you'll see that in many climate zones the  
13                  high performance glass is cost effective at much  
14                  higher prices than \$1.50 a square foot.

15                  We analyzed the nonmetal frame for  
16                  windows. And threshold price for that in our  
17                  analysis is \$1.50 a square foot, as well. We  
18                  think that's a very conservative estimate of the  
19                  cost, and those systems are, in fact, very cost  
20                  effective in most climate zones.

21                  And we've chosen to not include them  
22                  because of the concerns that the industry would  
23                  not be able to convert over to that system quickly  
24                  enough for the AB-970 process.

25                  Radiant barriers are assumed to cost 15

1        cents per square foot. And sealed ducts are  
2        assumed to cost \$250 per house. Duct design,  
3        which is a measure that involves insuring that  
4        duct air flows are correct, we're assuming costs  
5        of \$250 -- I'm sorry, we didn't use a threshold on  
6        that one because we didn't end up with that being  
7        in the packages.

8                TXVs threshold is \$150. And the  
9        combination HVAC, we did an analysis which assumed  
10       that since several of these measures have to be  
11       field verified post construction, if you had more  
12       than one of those together that it would be -- it  
13       would increase the cost effectiveness because  
14       you'd only have to do one post construction  
15       verification.

16               Next slide. This table tries to show  
17       that under a range of cost effectiveness  
18       assumptions the packages that we propose are cost  
19       effective.

20               If you take the no overhang case on the  
21       right-hand side here, this is analyzing the CEC  
22       prototype building, assuming that it doesn't have  
23       any overhangs; this is the approach that's  
24       traditionally been used in the standards  
25       development and in compliance.

1                   And underneath that we have three  
2           different cost assumptions for the future value of  
3           energy. The PUC ALJ assumption I just mentioned;  
4           the CEC traditional assumption; and the  
5           intermediate value that has the CEC estimates with  
6           time of day pricing.

7                   And our packages in all 16 climate  
8           zones, it should have climate zones down the left-  
9           hand side here, but it disappeared off the screen  
10          somehow -- in all 16 climate zones those packages  
11          are cost effective under any energy price  
12          scenario.

13                  If we go back and be more conservative  
14          and assume that we're talking about houses that  
15          are going to be complying prescriptively, and some  
16          of those houses may have an overhang, so that  
17          shading measures are actually less effective than  
18          they would have been, all of the packages are cost  
19          effective in all the climate zones except in  
20          climate zone 4 under the traditional CEC energy  
21          price assumption. There's one measure that's not  
22          cost effective.

23                  If you don't include air conditioning  
24          sizing, and you use the Public Utilities  
25          Commission estimate of future value of energy,

1       again the package is cost effective in every  
2       climate zone. So that the air condition sizing,  
3       although it's an important issue, is not critical  
4       to having this be cost effective.

5               And there are a couple cases where some  
6       of the measures in a couple of the climate zones  
7       are not cost effective in the lower price -- lower  
8       and future energy price scenarios.

9               Next slide. If you look in volume 3  
10       there are many tables of these analyses here which  
11       show the life cycle cost calculations in  
12       comparisons with measures. I'm not going to go  
13       into this in great detail, but the package that's  
14       proposed is shown in bold with a zero cost. And  
15       the costs in the columns for the first cost of the  
16       measure, the size of the air conditioner, the  
17       future value of gas savings, the future value of  
18       electric savings, and the sum of those which is  
19       the total life cycle cost, are all shown relative  
20       to the proposed package.

21               The individual lines here are all  
22       changes that could be done to those packages, one  
23       measure at a time, taking things out or putting  
24       things in. And all of the numbers that come out  
25       to be positive here have greater lifecycle costs,

1       and therefore are relatively not cost effective.  
2       Because we're going after the lowest life cycle  
3       cost.

4               In most climate zones there are some  
5       measures that are not included that, in fact,  
6       would reduce the lifecycle cost effectiveness,  
7       particularly nonmetal frames on windows in most  
8       climate zones.

9               MR. PENNINGTON:   Could I make a comment  
10       here.   The Warren Alquist requirement is that the  
11       standards be cost effective in their entirety.  
12       And this analysis shows on the bottom line the  
13       comparison of the current standards to the bold  
14       line, which is the proposed standards.

15              And in every scenario that proposed  
16       standards are overwhelmingly cost effective by the  
17       criteria that's in the Warren Alquist Act.  
18       Outrageously cost effective.

19              What we have done here is we have  
20       optimized the cost effectiveness so that each and  
21       every measure that we're proposing on itself,  
22       taking into account interactions, is cost  
23       effective.

24              So the criteria that we've imposed upon  
25       ourselves here is a much more rigorous criteria

1       than the Warren Alquist Act requires. So there is  
2       no question that these standards are cost  
3       effective under the Warren Alquist Act criteria.

4               MR. WILCOX: Thank you, Bill. I think  
5       that's the last slide.

6               Okay, so that's our summary of our  
7       proposed change to the standard and it's impact.  
8       We'd like to go into a little more detail on the  
9       issues related to air conditioning systems.

10              John Proctor, who is a member of our  
11       team, will present that material.

12              MR. PROCTOR: That's nearly the last  
13       slide. There you go, okay. Give me the second  
14       slide.

15              Okay, so there's three areas that we  
16       considered in field performance degradation of air  
17       conditioners: refrigerant charge, air flow and  
18       fan watt draw.

19              Next slide, please. This is the  
20       distribution of charge in the field based on over  
21       4000 units which have been measured in the field  
22       with specially trained technicians with special  
23       equipment that had an instantaneous data quality  
24       check on the work that they did.

25              You can see that only 38 percent of the

1 units had charge was within 5 percent of correct.  
2 And you can see the distribution of charge, and  
3 under-charge and over-charge in the rest of the  
4 units on the 62 percent which were incorrectly  
5 charged.

6 The effect of incorrect charge is shown  
7 here from laboratory tests. The darker line with  
8 the, I guess they're boxes, is the curve of the  
9 reduction in efficiency as charge is changed on a  
10 short tube orifice. And the one with the, I guess  
11 I'm going to have to use this pointer thing here  
12 -- the one with the x's is the TXV under varying  
13 charge, reduced charge and increased charge over  
14 manufacturers specified charge.

15 So, you can see a rapid degradation of  
16 efficiency on a short tube orifice which is the  
17 most common air conditioner metering device in the  
18 under-charge condition.

19 This information was calculated against  
20 the distribution which we found in the field to  
21 estimate the difference between, first of all, how  
22 much degradation there was due to charge, and  
23 secondly, how much improvement we could get using  
24 a TXV in the field as opposed to the short tube  
25 orifice for the distribution of incorrect charge



1 we found in the field.

2 Looking at airflow in the field there  
3 have been a number of studies of air flow across  
4 the inside coil on air conditioners. In those  
5 studies the standard deviations of air flow  
6 averaged about 20 percent.

7 For existing construction the air flows  
8 were 270, 300 and 350 cfm per ton. Incidentally,  
9 the general rule of thumb is 400 cfm per ton. And  
10 in hot, dry climates, actually you'd like some  
11 more in most of California.

12 The analysis that we did was based on a  
13 normal distribution with a standard deviation of  
14 80 cfm per ton, that's 20 percent, and a mean flow  
15 of 300 cfm per ton.

16 Next slide, please. This shows the  
17 effect of incorrect flow. Again, the darker line  
18 with the squares is the short-tube orifice.  
19 Again, these are laboratory test results to show  
20 what happens with low air flow.

21 And the upper line is a TXV. So from  
22 this we determined both what the degradation was  
23 in the field and what kind of improvements we  
24 could get from a TXV instead of a short tube  
25 orifice.

1                   Next slide, please. Fan watt draw in  
2                   the field. There's a paper from the year 2000  
3                   proceedings at a EEE conference which summarizes  
4                   nine studies. Those studies show that the indoor  
5                   fan watt draw per thousand cfm range from 490 to  
6                   570 watts. On new construction it's approximately  
7                   510 watts.

8                   This is different from the DOE test.  
9                   The DOE test assumes 365 watts. So the additional  
10                  watt draw in the field reduces the delivered  
11                  capacity of an air conditioner and also increases  
12                  the total energy consumption, thus reducing the  
13                  field efficiency from the DOE test efficiency.

14                  Next slide, please. That's it. Thank  
15                  you.

16                  MR. PENNINGTON: Do you want to take  
17                  questions, or does the --

18                  MS. SHAPIRO: Oh, I have just one  
19                  question. Mr. Proctor, does the TXV fix the watt  
20                  draw problem?

21                  MR. PROCTOR: No, it does not.

22                  MS. SHAPIRO: Okay.

23                  MR. PROCTOR: This data was used in two  
24                  different areas. One area was what the actual  
25                  field efficiency was that went into their

1        calculations. And then secondly, part of it, just  
2        part of it was what's the effect of the TXV.

3                MS. SHAPIRO: Okay. I understood the  
4        effect of the TXV until the end, and then I  
5        couldn't figure out the connection.

6                MR. PROCTOR: Right.

7                MS. SHAPIRO: Thanks.

8                PRESIDING MEMBER PERNELL: Okay, we'll  
9        proceed with staff --

10               MR. PENNINGTON: Ken Nittler has another  
11       part of the presentation here today. This is what  
12       Ken did over the Thanksgiving holidays.

13               (Laughter.)

14               MR. NITTLER: Yeah, I regret that  
15       there's only 168 hours to give per week.

16               Sort of in response, talking with a  
17       variety of people in the industry, it sort of  
18       became apparent that we needed to look at what  
19       these standards cost in more than one light.

20               And what I'm presenting here is a  
21       summary of paper that hopefully you folks got  
22       yesterday. There are copies out on the table that  
23       provide a little more information about cost.

24               So, next slide, please. Fundamentally  
25       we're doing a very different type of analysis than

1       went into the standards. The standards require  
2       that the measures be life cycle cost effective to  
3       the buyer. And as Bruce was just describing and  
4       John was describing, we did an analysis. It's in  
5       volumes 1 through 3, that does that type of  
6       analysis in great detail.

7               I think it's an appropriate way to build  
8       a standard, I think it's a good choice.

9               What this document does is try to  
10       describe an alternate way to look at the issue  
11       that's the biggest issue to builders, based on my  
12       experience of the standards, is what the first  
13       cost is.

14              Next slide. So here's the approach in  
15       this alternative analysis. You start with a  
16       building that just barely complies with the  
17       current standard. You assign that building a cost  
18       of zero dollars, because that's what the builders  
19       are already doing to comply with the standards  
20       that's already on the streets.

21              You then add or change features as  
22       sparingly as possible to make this building comply  
23       with the new standard. To make sure that you're  
24       capturing the worst situation for the builder,  
25       we're also doing what's called a worst case

1 orientation where you identify the building in  
2 each climate zone, the orientation that has the  
3 highest energy use.

4 So, basically since you're in the  
5 typical case the production builder builds the  
6 same house on any orientation, they end up  
7 building it to the worst orientation. So that's  
8 captured in the study, as well.

9 Then you figure out what features you  
10 added. You add up the cost, and that's what's  
11 presented in this paper.

12 Next slide, please. A little bit about  
13 the features. One goal is to change the features  
14 as little as possible. A second big goal when  
15 doing this type of analysis is to not alter the  
16 fundamental design. We're not changing window  
17 areas, we're not changing window orientations,  
18 we're not adding overhangs. We're only looking at  
19 features that can be added without disturbing the  
20 fundamental design of the building.

21 Another thing, when selecting these  
22 features is to select among a spectrum of possible  
23 choices, most builders would probably tend to  
24 choose features that have the least cost.

25 So, when sorting through these thousands

1 of cases, we kept an eye towards choosing the  
2 cases with the lowest first cost.

3 Now, the fourth item you see on this  
4 slide talks about the use of a better water  
5 heater. One of the things in the original  
6 workshop back in September that was on the table  
7 was adjusting the standards to account for the  
8 fact that we're pretty generous, that's my  
9 personal opinion, on water heaters. And for a  
10 variety of reasons that was not included in the  
11 proposal. It was hard to implement that in a  
12 practical way in the time limits that we had.

13 But it is a wonderful compliance option  
14 for the builder. Any builder who's not using the  
15 higher efficiency water heater is perhaps not  
16 making a very good choice.

17 So, one of the tenets of this study is  
18 that we are using the better water heaters. And  
19 I'll come back to that in a minute.

20 One other point that seems to have been  
21 brought out as being an issue is will the builders  
22 in the building industry and the HVAC industry  
23 truly reduce the size of the air conditioners. If  
24 you reduce the size of the air conditioners,  
25 smaller air conditioners cost less.

1                   Some of the numbers that Bruce was  
2           describing include that effect. I'll point out  
3           again, be real careful when you think about this  
4           issue, our life cycle cost analysis showed a case  
5           with no air conditioner sizing reductions that was  
6           overwhelmingly life cycle cost effective.

7                   Leave that aside, though. It may be  
8           true in building practice that the builder is not  
9           going to change the size, so this study does not  
10          take any credit reduction dollar cost savings for  
11          reducing the air conditioner size, even though it  
12          may be practical.

13                  One other thing is to look at features  
14          that builders are likely to use. Now, there's all  
15          kinds of measures out there. We could do a case  
16          with R-80 attic insulation. And there's some  
17          people in the room that would probably like that.  
18          They probably sell insulation.

19                  (Laughter.)

20                  MR. NITTLER: But we didn't do that in  
21          this study. We chose a list of practical features  
22          that are in frequent use today, maybe with the  
23          exception of the tested features, the HERS field  
24          verified features that are fairly new to the  
25          standards, beginning in '98.

1                   But all the rest of the features that we  
2                   expect here are time-proven features that could  
3                   easily be in wide use. We're not breaking new  
4                   ground here.

5                   Next slide, please. One of the other  
6                   big issues you've been hearing about, or will hear  
7                   more about, is the issue of field verification.  
8                   In package D, the proposed standard now includes  
9                   the requirement or the recommendation, I should  
10                  say, that you use things like duct sealing and  
11                  thermostatic expansion valves.

12                  And to insure that you actually capture  
13                  those savings, those features require field  
14                  verification. All the language that went for that  
15                  was adopted in '98. In '98 it was a credit. Now  
16                  it's part of the prescriptive packages. So one of  
17                  the cases we looked at here includes those  
18                  features.

19                  There is also, though, a case to be made  
20                  that perhaps there's some builders, perhaps in  
21                  rural areas, perhaps in metropolitan areas, that  
22                  will prefer not to use that type of feature that  
23                  would prefer to use a feature that they can buy  
24                  and have one of their subcontractors install, and  
25                  not be subject to field verification.



1                   So, there's a whole second case in this  
2                   study that looks at buildings without features  
3                   that need field verification.

4                   Next slide, please. There are two  
5                   buildings, a 1906 square foot, one story slab-on-  
6                   grade, has about 20.4 percent glass. In may  
7                   climate zones, the tougher climate zones, the  
8                   standards typically recommend 16 percent glass.  
9                   So this is a house with a higher than the standard  
10                  amount of glass in many climate zones.

11                  Building number two was a 2390 square  
12                  foot, two story, slab-on-grade that happened to  
13                  have identically 20 percent glass.

14                  These buildings were provided to the  
15                  AB-970 update team by CBIA representatives back in  
16                  October. So that's what we started with.

17                  Next slide, please. To look at this in  
18                  great detail, we ended up doing 3600 different  
19                  combinations of features for each of these  
20                  buildings. And I'll explain a little bit more  
21                  about what those were in a minute.

22                  Obviously the cost depends on the size  
23                  of the building and what features are included.  
24                  For example, in the larger home 20 percent glass  
25                  means that there's 483 square feet of windows.

1                   In the smaller home it means there's  
2           only, I forget the number, 383 square feet. So,  
3           if you upgrade the windows in the bigger building  
4           the cost is a little bit higher. So keep that in  
5           mind as we look at these tables.

6                   Then we did one last thing, which is we  
7           applied the Construction Industry Research Board  
8           data to do a statewide average. So we're  
9           weighting the results to say that if you, for  
10          instance here in Sacramento we have one of the  
11          highest percentages of housing starts, so that  
12          gets weighted a little bit more than a house being  
13          built in Eureka or something like that, where  
14          there's very little building, at least relative to  
15          Sacramento.

16                  Next slide. Now, I don't want to go  
17          into looking at all these numbers. They're in the  
18          tables. Here is one of what costs were used for  
19          this, for building one. There's a similar table  
20          for building two in the study. You can see how  
21          the costs were derived.

22                  Where possible the costs came from the  
23          table that Bruce showed earlier that's in volume  
24          three. There was also a variety of insulation  
25          costs where we used data that was provided in

1 information that BIA representatives provided back  
2 in October, as well.

3 Next slide. This is a table that  
4 actually deserves a little bit of consideration.  
5 Because one question that's going to come up, are  
6 there adequate choices for builders to choose from  
7 to get a building into compliance.

8 And this shows a summary of the 3600  
9 runs done, about 1977, this is building number  
10 one, complied. There is a plethora of choices  
11 that work here. And you do that on a percentage  
12 basis, it's 55 percent.

13 So you look at that and you say, well,  
14 jeez, 55 percent, that doesn't sound very high.  
15 But please keep in mind that some of the features  
16 in this mix of 3600 runs are features that are  
17 below what the package requires.

18 For example, climate zone 12 requires R-  
19 38 attic insulation. A whole bunch of these cases  
20 were run at R-30 attic insulation.

21 So the fact that there's 55 percent of  
22 the cases means there's almost 2000 cases here  
23 where the builder can choose from a mix of  
24 features and get a building into compliance.

25 Now, the other thing this slide does

1 show, of course, is it gets tougher in climate  
2 zones that have high heating and cooling. And I  
3 would just suggest, isn't that the purpose of a  
4 building energy standard, is that in those climate  
5 zones that have the highest energy use we should  
6 be making sure that they're built with enough  
7 features to make them reasonably energy efficient.  
8 So, that's it.

9 Next slide. Okay, here's a sample of  
10 the matrix of features that were chosen for  
11 building number one with verification features.  
12 And the bottomline number over here, I can't read  
13 it, it's 396, I think -- it's 396 bucks.

14 So this is the area weighted industry  
15 start number. You can see, if you study this  
16 table, what sorts of features were added.

17 Now, what's different about this study,  
18 keep in mind that first of all we're using the  
19 better water heater. Generally that better water  
20 heater costs nothing more. So that's one key  
21 feature that makes this possible.

22 Another thing that makes it possible is  
23 that builders already make choices to meet the  
24 current standard that exceed the package levels.  
25 And you can see this.

1           As an example, in climate zone one here,  
2           this particular building in the '98 standards  
3           already moved to a nonmetal frame. Okay, so that  
4           cost was already incurred by the builder if he was  
5           building this home in climate zone one. So we're  
6           showing the cost differential, the added cost to  
7           this proposed standard.

8           You can study all the different numbers  
9           and how they're derived, but the bottomline here  
10          is \$396 in this example, with field verification.

11          Go to the next slide, please. Okay,  
12          here is the second case, case two, where we do not  
13          have field verification. So, you notice all the  
14          features in the middle here, the duct sealing, the  
15          duct design and the TXVs are blank because I tried  
16          to construct a compliance case that didn't use  
17          those features. And when you did that the price  
18          went up to whatever that number is. 632. It  
19          helps not to have laser eye surgery, okay.

20          (Laughter.)

21          MR. NITTLER: But basically you see that  
22          these features in here are blank, so none of those  
23          nasty features that require field verification are  
24          included. And I didn't mean nasty, I actually  
25          support them, but for people who feel they are a

1       problem. There are plenty of alternatives that  
2       you can use.

3               And they end up being -- you end up, if  
4       you studied and compared these two tables, you'd  
5       find more insulation measures, you'd find more  
6       window measures, and you'd find higher equipment  
7       efficiencies. Which sort of makes sense. If  
8       you're not going to take advantage of the duct  
9       sealing and the duct testing, then you have to  
10      move to more traditional features, equipment  
11      efficiencies and better building products that  
12      lead to more efficient homes.

13             Next slide. Why don't we skip this one.  
14      The next slide, too.

15             Here's sort of the bottomline. Here are  
16      the average statewide costs. Building one came  
17      between 396, \$632. Building two ranged from 592  
18      to 729. About more than 50 percent of the cases  
19      that we looked at did comply, so there are plenty  
20      of choices.

21             And there are a bunch of options, just  
22      to close this, there are a bunch of options  
23      possible that we did not examine. For instance,  
24      we didn't look at 11 SEER air conditioners. There  
25      could be cases where that would be enough to bring

1 a building into compliance.

2 There are features like pipe insulation  
3 on water heaters. There's the possibility of  
4 alternate window products that might have better  
5 performance values. So there are many other  
6 possible choices here that weren't examined. But  
7 the bottomline is that the costs are, with this  
8 alternative analysis, are in the ranges just  
9 described.

10 Thank you.

11 MR. PENNINGTON: That completes our  
12 presentation.

13 PRESIDING MEMBER PERNELL: Okay. You  
14 know what I'd like to do is -- off the record,  
15 please.

16 (Off the record.)

17 PRESIDING MEMBER PERNELL: And we have  
18 Bob Raymer and Mike Hodgson.

19 MR. RAYMER: Are we waiting for the  
20 other Commissioner?

21 PRESIDING MEMBER PERNELL: He should be  
22 here shortly.

23 MR. RAYMER: Go ahead?

24 PRESIDING MEMBER PERNELL: Yeah, please.

25 MR. RAYMER: Okay. Commissioner Pernell

1       and staff, I'm Bob Raymer, Technical Director with  
2       the California Building Industry Association; and  
3       with me is CBIA's Energy Committee Chairman, Mike  
4       Hodgson.

5               A few introductory comments. I would  
6       like to say that over the past two months staff  
7       has been attempting the impossible, and to date,  
8       they have done a tremendous job of moving this  
9       issue forward. They've always been receptive to  
10      listening to our comments, concerns. We've had a  
11      number of very productive informal meetings. And  
12      to date, I still remain positive that we can come  
13      to terms here.

14             Having said that, and we do wish to  
15      extend our sincere thanks for these  
16      opportunities -- having said that, I do want to  
17      make notice that we do have some continuing  
18      concerns that we do want to seek to be resolved.  
19      But we'd also like to make note is that in the end  
20      of January CBIA is going to be conducting a  
21      quarterly get-together in San Diego, and we are  
22      requesting that staff make a presentation at that  
23      time of what I would imagine would be the final  
24      set of standards to a number of the bodies that  
25      will be down there in San Diego.



1           Having said that, you are in receipt of  
2           a November 27th letter that we passed over to you  
3           yesterday evening. And with that I'll cover three  
4           lead topics here.

5           The first has relatively little to do  
6           with this specific proceeding, but can have a  
7           rather enormous impact on this proceeding. And  
8           that is the pending increase in residential  
9           appliance efficiency standards.

10          There's a title 20 rulemaking that's  
11          going on simultaneously with this rulemaking. It  
12          has come to our attention that there are some  
13          rather substantial increases in the minimum  
14          efficiency levels being proposed for air  
15          conditioners, water heaters and other devices  
16          going into residential dwellings.

17          I'm not going to raise the issue of the  
18          specific levels of efficiencies that are being  
19          proposed, but it has come to our attention that  
20          the effective date that is being proposed at the  
21          state level is being viewed as being February of  
22          2002.

23          That presents some rather enormous  
24          concerns for us, given the cost impact here, and  
25          the impact on the set of regulations that we're

1 looking at right now.

2 The industry and the enforcement  
3 community doesn't really separate which rulemaking  
4 that happens. It's what gets implemented in the  
5 field. And to us, this is all one happy  
6 rulemaking.

7 And, so, with that we simply can't  
8 differentiate between, although we'll certainly  
9 participate in these various rulemakings, we can't  
10 really separate them out from a cost perspective  
11 or an implementation perspective.

12 Having said that, CBIA would like to  
13 formally request the Energy Commission, probably  
14 can't respond today to this issue, but we would  
15 like the issue of when these standards are being  
16 viewed as taking effect, to be responded to.

17 It was our understanding that you must  
18 seek federal approval. And once that federal  
19 approval comes, there would be a three-year period  
20 after that approval takes place. And from what  
21 I'm understanding the staff is proposing, there  
22 would be no three-year period.

23 And I'm sure the appliance manufacturers  
24 and, of course, our industry would be very  
25 interested in understanding just when this would

1       become mandatory on a statewide level.

2                   PRESIDING MEMBER PERNELL:   You're  
3       referring to the appliance standards?

4                   MR. RAYMER:   Yes, particularly the air  
5       conditioning, the 13 SEER and the 11.6 EER.   In  
6       discussing this with one of the lead advocates for  
7       the appliance manufacturers he was unaware of the  
8       date involved here.   He was certainly aware of the  
9       figures, the 11.6 and the 13, but the February  
10      2002, he was under the understanding it was 2005.

11                  And I've talked to a number of other  
12      sources familiar with federal and state  
13      administrative procedure.   They, too, thought we  
14      were talking about 2005, 2006.   And these are  
15      individuals with 20-plus years of experience each.

16                  And so I'm concerned, how is it that  
17      staff is proposing that the appliance efficiency  
18      for residential take effect so quickly.   Obviously  
19      we're not expecting a response to that now, but  
20      we, as this goes on over the next couple of weeks,  
21      we are hoping to get some type of response to  
22      that.

23                  Secondly, and probably most importantly  
24      for this rulemaking, CBIA is requesting, as  
25      mentioned in our letter, that the Energy

1 Commission at this time refrain from incorporating  
2 tight ducts and TXVs into the package D until  
3 2004, triennial update of the California Building  
4 Standards Code.

5 And when I say refrain, make no mistake  
6 here. We're not questioning the energy efficiency  
7 at all of TXVs or of the tight duct systems. As a  
8 matter of fact, we support it, the inclusion of  
9 tight ducts into the standards in the '98 update.  
10 We recognize the energy efficiency coming from  
11 that.

12 The question here is one of  
13 implementation and the administrative logistics  
14 involved here. And, quite frankly, on an  
15 emergency proceeding there's no way that industry  
16 or the enforcement community is going to be able  
17 to handle the third-party inspection requirements  
18 associated with the tight ducts and the TXVs in a  
19 short order, even with an extended implementation  
20 date and a grandfathering clause.

21 This is something that needs market  
22 transformation and simply cannot occur  
23 administratively overnight.

24 The benefits of keeping this out of the  
25 package features until the 2004 update are rather

1        numerous. In addition to the reduced compliance  
2        costs, it would allow promotion of the tight ducts  
3        and TXVs through very low cost utility incentive  
4        programs.

5                We're already in some cases going over  
6        the current '98 standards in some parts of the  
7        state and using tight ducts to do that.

8                Given the low cost of tight ducts, I  
9        could see, through utility incentive programs that  
10       are already in place, a much more widespread use  
11       of this item. Right now it's less than 1 percent  
12       of the time. And it's becoming a package feature.

13               The Energy Commission is somewhat  
14       assuming that overnight we're going to be able to  
15       go to a 70 to 80 percent threshold here.

16               In addition, it would also provide CBIA,  
17       the CEC and other interested parties the time  
18       needed to pursue legislation and administrative  
19       changes needed to establish an HVAC subcontractor  
20       self-certification program for tight ducts should  
21       the CEC see merit in that.

22               You've received a proposal suggesting  
23       that there should be self-certification program  
24       allowed by the CEC for HVAC subcontractors to  
25       effectively do their own third party review of

1       this.

2               That, according to staff, would require,  
3       and I agree, it would require legislation. We  
4       would like to help the Energy Commission do that.  
5       And we would go on as a cosponsor and promote such  
6       a measure, if the CEC sees the merits of that  
7       case.

8               Lastly, by putting this off until 2004  
9       it would certainly allow ample time for industry  
10      and the enforcement community to make a smooth  
11      transition to the administrative requirements  
12      associated with enforcing tight ducts and TXVs.

13              On to the last two items. In the letter  
14      I've indicated our concerns with implementation of  
15      the effective date, but it's come to my attention  
16      that right now staff may already be somewhat  
17      resolving these issues in terms of, I believe, an  
18      effective date that may be in June or July. And  
19      what we call a grandfathering clause for vested  
20      plans that would sunset in January of 2002.

21              Those are certainly very acceptable to  
22      us. And so, to me, if that's where they're  
23      heading that's a nonissue to us.

24              Lastly, in terms of the cost analysis  
25      basecase, this has been a problem for CBIA and the

1 Energy Commission for the past two decades.

2 The basecase house that CBIA utilizes is  
3 one that is commonly marketed to the general  
4 public and has been for several decades. And  
5 continues to be marketed.

6 We simply use more glass than the Energy  
7 Commission uses in their packages. Consequently,  
8 when you do your impact analysis ours always  
9 appears substantially more costly. And from what  
10 I understand from our analysis right now, we're in  
11 the 11- to \$1200 range as compared to your 300.

12 So consequently hopefully down the road  
13 we can somewhat come to terms with a different  
14 basecase approach so that we're all talking the  
15 same language. And within the next three to four  
16 days I hope to have our consultants having  
17 reviewed the latest cost analysis that Mr. Nittler  
18 presented earlier.

19 And with that, I'd like to turn it over  
20 to Mike Hodgson, our Energy Committee Chair.

21 PRESIDING MEMBER PERNELL: Let me ask  
22 you a couple questions. One of them is according  
23 to our presentation we were using some of your  
24 basecase analysis, he did say CBIA, so --

25 MR. RAYMER: Yes, you are.

1                   PRESIDING MEMBER PERNELL: And you're  
2 saying that --

3                   MR. RAYMER: Yeah, we need time to look  
4 at how that was used, because there seems to be a  
5 few somewhat minor inconsistencies.

6                   PRESIDING MEMBER PERNELL: Well, okay.

7                   MR. RAYMER: But we'd like to simply  
8 respond and find out exactly how the consultant  
9 used these, and figure out why our numbers are  
10 wrong, and hopefully they'll be able to teach us  
11 how to do it right.

12                  PRESIDING MEMBER PERNELL: And I'm sure  
13 they'll make themselves available.

14                  MR. RAYMER: They're more than willing  
15 to burn the midnight oil.

16                  PRESIDING MEMBER PERNELL: The other  
17 question I have deals with tight ducts. Are you  
18 suggesting that tight ducts are not necessary, or  
19 they don't exist now in the market? Or maybe the  
20 homeowner shouldn't have them, or --

21                  MR. RAYMER: No, no, I'm not suggesting  
22 that at all. Tight ducts do exist now, it's just  
23 on a much -- a far more limited level of  
24 application than we would normally consider  
25 happening out there.



1                   We thought that this was going to go  
2                   over like gangbusters during the '97/98 update.  
3                   Administratively it is somewhat burdensome to  
4                   implement.

5                   And I understand that through our --  
6                   PRESIDING MEMBER PERNELL: I'm talking  
7                   -- you're talking about third party verification?

8                   MR. RAYMER: Yes, that's what's holding  
9                   this up.

10                  PRESIDING MEMBER PERNELL: I'm talking  
11                  about tight ducts in general.

12                  MR. RAYMER: Tight ducts work.

13                  PRESIDING MEMBER PERNELL: If a  
14                  contractor builds a home, they put in an HVAC  
15                  system, and that system is, you know, in the  
16                  attic. And I'm assuming that they are wrapping  
17                  that with material that will prevent it from  
18                  leaking.

19                  And I'm also assuming that that's  
20                  considered a tight duct.

21                  MR. RAYMER: It works.

22                  PRESIDING MEMBER PERNELL: It works.

23                  MR. RAYMER: It certainly does. And it  
24                  is cost effective when done correctly. The  
25                  problem here is not with the tight duct, itself,

1 but with the administrative inspection, if you  
2 will, of the tight duct. That needs to be worked  
3 out and the industry needs a little bit of time  
4 here to make the market transformation here.

5 This is -- tight ducts is a good idea, a  
6 good ideal, and a concept that industry, I'm sure,  
7 is going to be embracing over the next few years.  
8 It's just administratively overnight, with the  
9 third party inspection requirements such as they  
10 are, we're not going to be able to implement as  
11 quickly as the Energy Commission would hope that  
12 we could.

13 But we are not saying tight ducts are a  
14 bad idea. That's not what we're trying to get  
15 across here. Tight ducts are a good idea.

16 PRESIDING MEMBER PERNELL: All right,  
17 and we're trying to pursue tight ducts.

18 MR. HODGSON: Commissioner Pernell, may  
19 I add a clarification on that. The building  
20 industry has a training program out in the field  
21 that is cosponsored with the Energy Commission and  
22 the Department of Energy.

23 And there are approximately 20 training  
24 sessions a year to production builders that  
25 average from say three to five companies at a

1 time.

2 Part of that training goes out into the  
3 field and does duct blasting of existing duct  
4 systems in new construction.

5 The average three to four years ago when  
6 this started, the ducts leaked probably 22 to 25  
7 percent on average if you took a look at maybe a  
8 few, probably 50 to 60 subdivisions that are  
9 looked at each year.

10 Currently that number now is down in the  
11 12 to 15 percent range.

12 So I would say, to answer your question,  
13 tight ducts or typical duct installation per  
14 industry is somewhere in the 12 to 15 percent  
15 range, based on a statewide average.

16 What you're asking for is 6 percent  
17 leakage, which is significantly different than  
18 what we're doing right now.

19 PRESIDING MEMBER PERNELL: Okay, but --  
20 all right, I won't belabor this. Let me just  
21 leave you with this thought. As a homeowner who  
22 pays an average of \$200,000 for a house, if I'm  
23 within that 16 percent and my ducts are leaking,  
24 I'm upset.

25 So, I mean the point is if we have,

1       which we do, legitimate contractors that go up and  
2       do that, then all we're saying is if you're saying  
3       that those techniques are efficient and are done  
4       correctly, then we don't have a problem. We  
5       shouldn't have a problem with either self-  
6       certification or third party certification,  
7       because it's all going to be done properly.

8               MR. HODGSON: And to that, back in '97,  
9       '98, CBIA with the Energy Commission and Lawrence  
10      Berkeley Lab, worked out a series of criteria  
11      above and beyond code -- we called them the  
12      protocol -- for installing the tight ducts.

13             And CBIA is promoting the incorporation  
14      of these protocols into the subcontractor  
15      agreements such that it is a binding, you know,  
16      agreement between the subcontractor and the  
17      builder that these items are going to happen with  
18      installation.

19             But, quite frankly, we also find that  
20      when that occurs, unless there's some kind of  
21      checking or whatever, perhaps statewide, it's not  
22      actually being applied in the field in the quality  
23      fashion that it should.

24             And what I'm saying here is tight ducts  
25      are good. They will benefit the consumer. But

1 the inspection requirements the Commission is  
2 proposing are so burdensome right now that it will  
3 inhibit our ability to actually utilize the tight  
4 duct system effectively.

5 PRESIDING MEMBER PERNELL: I don't want  
6 to seem negative here. I think you guys are doing  
7 a good job, especially with your training program.  
8 We're familiar with that. So, don't take this  
9 wrong.

10 But I think that it is the, you know,  
11 the homeowner has a responsibility to get not only  
12 tight ducts, but everything else in their home  
13 working correctly.

14 So, you know, my view of this is that  
15 every homeowner should have tight ducts anyway.  
16 And we can talk about the verification issue, but  
17 the fact that you need to have tight ducts, I  
18 think no one is arguing with.

19 Okay, you may --

20 MR. HODGSON: Proceed?

21 PRESIDING MEMBER PERNELL: Yes.

22 MR. HODGSON: All right. Commissioners  
23 Pernell and Rosenfeld, ladies and gentlemen, I'm  
24 Mike Hodgson, representing the Building Industry  
25 as Chair of the CBIA Energy Committee.

1                   CBIA has entered comments into the  
2                   dockets in letters from both myself and Bob  
3                   Raymer. As stated in our letters, we appreciate  
4                   the assistance that we've had working with staff  
5                   to find a reasonable and satisfactory solution.

6                   Unfortunately, to this date we have  
7                   failed.

8                   To review the highlights of those  
9                   letters, which is what I'd like to do right now,  
10                  and add a few more comments to the record.

11                  The first issue is the stringency of the  
12                  proposed standards is really unnecessary. In  
13                  fact, those proposed standards, in general, of AB-  
14                  970 may be unnecessary.

15                  AB-970 was enacted to respond to the  
16                  lack of California's ability to meet peak demand  
17                  in the next few years. Scott Matthews explained  
18                  this crisis to CBIA at the fall board meeting, and  
19                  handed out charts demonstrating this crisis to be  
20                  the worse in 2001 and 2002, and then subsiding.

21                  Apparently this crisis has passed. On  
22                  October 20th the CEC released a report that  
23                  states, California should have enough power to  
24                  meet its electricity demand next summer.

25                  This analysis indicated that under the

1       most likely, above normal and extremely hot  
2       temperature scenarios that peak demand will be met  
3       without interruption. This demand was  
4       approximately 50,000 megawatts. An additional  
5       3000 megawatts were under development and may be  
6       available for part or all of the 2001 summer.  
7       Additionally, another 15 generation projects are  
8       being considered for licensing by the Commission,  
9       and possibly on track by the 2002/2003 timeline.

10               Since the CEC report states that the  
11       2001 and 2002 crisis no longer exists, why is the  
12       CEC being so aggressive in the pursuit of new  
13       standards?

14               CBIA understands that the CEC is  
15       required, by legislation, to insure adequate  
16       supply and to insure energy conservation in the  
17       state. This includes the adoption and  
18       implementation of cost effective standards.

19               CBIA believes that these standards  
20       should be reasonable, the proposed standards are  
21       not. These proposed standards are too costly.  
22       CEC consultants' analysis states that the  
23       standards cost \$339 per house, assuming an average  
24       of 1.7 ton air conditioning downsizing.

25               Downsizing to this degree will not

1       happen because consumers want comfort, and  
2       builders need to install adequate air flows. It  
3       is not practical to install a 2.5 ton air  
4       conditioner in Palm Springs for a 2000 square foot  
5       house, as the analysis proposes.

6               CBIA's cost analysis estimated average  
7       cost of \$1900 per home. There are several reasons  
8       why the CEC and the CBIA cost differ. Reason one  
9       has already been gone over. The CEC assumes 16 or  
10      20 percent glazing, which is not typical in our  
11      construction.

12             The Sacramento area, which was  
13      referenced, climate zone 12, the average glazing  
14      is 20 percent, where the packages assume 16. More  
15      glass, more cost to comply.

16             The CEC assumes that house has equal  
17      glass distribution. Reality is that 70 percent of  
18      the glass is on the front and rear of the  
19      building. Increasing, once again, cost to comply.

20             The major difference is how CBIA did  
21      their analysis and assumes that not all builders  
22      would gravitate to energy features that needed  
23      verification. Tight ducts, TXVs.

24             CBIA analysis used three approaches.  
25      Some builders would go verification, some would go



1 with improved glass, which we call spectrally  
2 selective glass, and others would go with features  
3 other than verification or glass.

4 The reason for this assumption is  
5 builders may not have access to raters. They may  
6 not want raters on the job site. They may have  
7 window contracts in place and not want to break  
8 them. Or low sheeting coefficient glass is not  
9 available to that builder. There are a variety of  
10 reasons.

11 In addition to the costs from these  
12 proposed standards, the CEC has requested new  
13 water and air conditioner appliance standards to  
14 be effective February 1st of 2002. If these  
15 standards become effective, the costs of AB-970  
16 increases to \$3154 per house. These standards are  
17 not cost effective, they're costly.

18 The standards reduce affordability of  
19 housing, especially in the Central Valley where  
20 housing is the most affordable.

21 The proposed standards discriminate  
22 against new construction. The CEC has estimated  
23 that somewhere between 104 and 155 megawatts will  
24 be saved from the proposed standards.

25 Realizing that all homes in cooling

1 climate zones do not install air conditioners, and  
2 at most the air conditioner tonnage saved at peak  
3 would be one ton, these standards could cost  
4 between \$2000 to \$4000 per kilowatt saved. This  
5 is eight to 16 times greater than the CEC is  
6 willing to pay under the AB-970 peak load  
7 reduction funding guideline of \$250 maximum per  
8 kW.

9 This high cost to new residential  
10 construction is discriminatory and attacks on the  
11 potential homebuyer that decreases the  
12 affordability of new housing.

13 The proposed standards are also  
14 unworkable. The CEC is introducing new devices  
15 such as TXVs, new verification techniques, tight  
16 ducts and TXVs, new documentation requirements,  
17 new inspections all in a short period of time  
18 without adequate notice, tools or training.

19 For the standards to be effective they  
20 must be understood. CBIA agrees with CALBO that  
21 new standards should not take effect in less than  
22 180 days after the compliance tools, which by  
23 definition are software and an updated manual, are  
24 available and local jurisdiction and builders are  
25 trained.

1                   CIBA also recommends that vested plans  
2                   be valid through build-out or January 1st of 2002.  
3                   For our membership to understand and comment on  
4                   the impact of AB-970, CBIA requests that the CEC  
5                   leave this docket open for comment for at least  
6                   two weeks.

7                   CBIA is interested in developing  
8                   enforceable energy efficiency standards that  
9                   encourage quality construction. The CEC and CBIA  
10                  have built a strong partnership encouraging  
11                  quality construction and construction protocols.  
12                  CBIA believes that the CEC can obtain significant  
13                  conservation through proper understanding,  
14                  training and enforcement of the existing  
15                  regulations.

16                  CBIA recommends that the CEC adopt the  
17                  proposed standards without requiring tight ducts  
18                  or TXVs. This would lead to the least disruption  
19                  to the construction industry while maximizing the  
20                  energy savings.

21                  Before I conclude we've had very little  
22                  time to look at the study that was just proposed  
23                  by Mr. Nittler. But a comment I would like to  
24                  make, and then I would like the opportunity to  
25                  come back and discuss it with Ken and staff, is

1       that on page 3 I think it's very important to note  
2       that the analysis was done with the product that  
3       is only available from one supplier.

4               And in the presentation Mr. Nittler did,  
5       he did a very good summary of issues that are  
6       important to residential builders, i.e., you do  
7       the analysis as the house is built; you do it as  
8       the master plan.

9               Another tenet that you have to realize  
10      is you have to have multiple suppliers of products  
11      for you to get a good bid.

12              And so in looking at page 3, the bottom  
13      of the third paragraph, the last sentence says:  
14      Runs using this feature that are marked with an  
15      asterisk, which is this product, which is -- I  
16      don't want to say proprietary, but a single source  
17      at the current time -- if you go further it says  
18      the statewide weighted average added cost would  
19      add \$172 on building one, and \$242 on building  
20      two.

21              If you then take a look at the front  
22      page of the analysis, case one would then range  
23      between -- excuse me, case two, which is the case  
24      without field verification would, instead of being  
25      \$632, would be \$804. And if you take a look at

1 building two, which is the larger building, it  
2 would go to \$971, using Mr. Nittler's analysis, so  
3 tat we could do competitive bidding.

4 The point being is costs are greater  
5 than what you anticipate. CBIA is not necessarily  
6 the best person to address costs. We would  
7 recommend that you talk to our membership, of  
8 which we have some members here that would like to  
9 talk about that issue.

10 So, in conclusion, I'd like to thank you  
11 for receiving my comments. And I'm available for  
12 questions.

13 PRESIDING MEMBER PERNELL: Okay.  
14 Obviously there's a difference in cost between our  
15 analysis and CBIA analysis, and I would just ask  
16 that CBIA and staff get together and work those  
17 out.

18 One comment on something you said which  
19 dealt with a CEC report that talked about the year  
20 2000, 2003 in terms of what we're doing in  
21 generation. And it is our contention that we are  
22 doing a lot here in licensing power plants and to  
23 insure that California has the needed generation.

24 I think that's what that report that our  
25 news article that you cited addresses. We think

1       that doesn't mean that high prices won't be  
2       around, although we don't think it's as much  
3       generation as it is the market.

4               And so I just don't want you to take  
5       that article out of context. And it certainly  
6       doesn't mean that we need to not go forward with  
7       the mandate of 970.

8               MR. HODGSON: My point, Commissioner  
9       Pernell, is how this was explained to the building  
10      industry was a chart that was generated by the  
11      Energy Commission, which I'm sure you've seen  
12      before, which talks about generation capacity.

13              And the deficit is in 2001 and 2002.  
14      The news release speaks to that generation  
15      capacity to say it's adequate under the three  
16      temperature variations in the foreseeable future.

17              We're not downplaying the importance of  
18      conservation. We're not downplaying the  
19      importance of energy standards. What we're after  
20      is what the explanation to the industry was,  
21      because this is a peak load crisis and we're  
22      trying to respond to that.

23              PRESIDING MEMBER PERNELL: I have -- you  
24      got everybody want to answer that one.  
25      Commissioner Rosenfeld.

1                   COMMISSIONER ROSENFELD: I just want to  
2                   call your attention to the top line of the very  
3                   graph you just pointed out. And it says that we  
4                   might get through next summer if the summer is not  
5                   hotter than one in five.

6                   So that's sort of equivalent to going to  
7                   the doctor and saying you only have a 20 percent  
8                   chance you've got something wrong with you, would  
9                   you like to get a checkup.

10                  First of all, it's probably not one in  
11                  five. I think that's based on 30-year averages,  
12                  and the weather is getting hotter every year. So  
13                  the one in five, you know, might be one in three.

14                  That still assumes that everything else  
15                  works fine. Murphy's law doesn't apply. Murphy's  
16                  law is repealed. All transmission lines work.  
17                  All power plants work and so forth and so on.

18                  Finally, I think the report was probably  
19                  a little bit optimistic about how many power  
20                  plants have been -- are going to be in place by  
21                  next summer. In the last two weeks, as far as I  
22                  know, four power plants have been withdrawn,  
23                  either because of problems with the local  
24                  community, "not in my back yard" or because they  
25                  worry about pricing caps.

1                   I would say it still looks pretty scary  
2                   skating into something which could be a hot  
3                   summer, which is going to have less power plants  
4                   than are on there, and assuming that nothing  
5                   breaks down.

6                   So, the real issue then is, independent  
7                   of that, if those things happen, of course the  
8                   value of kilowatt hours, thousands of dollars, not  
9                   \$250.

10                  So I think we're back to just cost  
11                  effectiveness. And the real issue, of course, is  
12                  \$4000 per kilowatt is not a good idea. And \$250  
13                  per kilowatt is a darn good idea. And we'll have  
14                  to get back to discussing the numbers.

15                  Thank you.

16                  MS. SHAPIRO: I also want to add for  
17                  your clarification when you read the report and  
18                  not just the press releases on it, that those  
19                  numbers assume the efforts that we are taking for  
20                  conservation and energy efficiency.

21                  So demand reduction is built into those,  
22                  things that are ongoing to reduce demand are built  
23                  in. So, as I think you know.

24                  MR. RAYMER: Right, and the only --

25                  PRESIDING MEMBER PERNELL: But we still



1 think it's the market.

2 MR. RAYMER: And, Commissioner, I would  
3 agree with you, but it's a little misleading to  
4 the public to put out press releases, not that I'm  
5 being critical here, that state that --

6 (Laughter.)

7 MR. RAYMER: -- should the state  
8 experience extremely hot temperatures, which has a  
9 one in ten-year likelihood, and I'm quoting from  
10 the press release, and saying that you have  
11 adequate generation supply.

12 We do not have time to read large  
13 lengthy reports such as getting 3600 runs the  
14 night before, and --

15 PRESIDING MEMBER PERNELL: But, I  
16 think --

17 MR. RAYMER: -- so we're trying to  
18 respond to the issue that we think is brought to  
19 our attention, which is a peak load problem.

20 PRESIDING MEMBER PERNELL: But let me  
21 just say, adequate generation supply doesn't mean  
22 low prices. And I think you know that.

23 MR. RAYMER: I agree one hundred percent  
24 with you, Commissioner, we're not --

25 PRESIDING MEMBER PERNELL: So, all

1 right, so we're not --

2 MR. RAYMER: -- arguing prices here.

3 PRESIDING MEMBER PERNELL: -- I think  
4 we're on the same page.

5 MR. RAYMER: I think that's a whole  
6 different issue.

7 PRESIDING MEMBER PERNELL: Price is a  
8 different issue?

9 MR. RAYMER: Price is different, the  
10 availability of energy in our state and the price  
11 of that energy are not necessarily related, as we  
12 found out just last month --

13 PRESIDING MEMBER PERNELL: Right, and  
14 that's why I say I think we're on the same page  
15 here.

16 MR. RAYMER: I would agree with you,  
17 Commissioner.

18 PRESIDING MEMBER PERNELL: Okay, I have  
19 Mr. Pennington.

20 MR. PENNINGTON: We'd like to respond to  
21 some of the comments that CBIA has made regarding  
22 our analysis and also regarding some of their  
23 points of view, if that's all right.

24 MS. SHAPIRO: You have to speak right  
25 into the mike, Bill, because we can't hear you.

1       It's not being broadcast --

2               PRESIDING MEMBER PERNELL: Bill has said  
3       that he and his team would like to respond to some  
4       of the comments that CBIA has made, and so we'll  
5       allow them to do that. I would ask you to be  
6       brief so we can --

7               MR. PENNINGTON: Sure.

8               PRESIDING MEMBER PERNELL: Bill, you  
9       have to speak into the mike.

10              MR. PENNINGTON: Each of Ken, Bruce and  
11       Mark want to comment on what's been said.

12              MS. SHAPIRO: Briefly.

13              MR. PENNINGTON: Okay.

14              PRESIDING MEMBER PERNELL: Okay,  
15       let's --

16              MR. MODERA: I'm Mark Modera and I'm the  
17       fellow who did the duct work for the consultant  
18       team. And I'll just be really brief, and that is  
19       to point out that we were not blind to the issue  
20       of implementation with respect to duct  
21       verification.

22              And in fact I went and interviewed a  
23       number of people around the state to find out how  
24       many available people there are. CHEERS explained  
25       that they already have people in place to meet the

1       need.

2               I also did the math, and the math was  
3       that if you took 100,000 houses a year and said  
4       you were going to have to test all of them  
5       according to the existing criteria you would wind  
6       up needing on the order of 40 or 50 testers in the  
7       state.

8               And in terms of trained personnel, we're  
9       at the level of something like 300 or 400 people  
10      in the state that have been trained that could go  
11      into that role.

12              And the last thing I would say about  
13      implementation is that there's a bit of the  
14      chicken-and-the-egg. If somebody -- part of the  
15      reason that we didn't get tight ducts since '98  
16      was the fact that there was nothing -- there  
17      wasn't enough of a driving force for people to  
18      change.

19              And if you have, sort of like if you  
20      build it they will come. All right, there are  
21      trained people who exist out there. And if  
22      there's a market and if there's someone calling  
23      them up and saying, would you come and do this, I  
24      would not be worried at all about their being able  
25      to meet that issue.

1 I'll stop at that.

2 MR. NITTLER: Mr. Hodgson mentioned on  
3 page 3 of the study that I was describing a  
4 concern that one of the products there apparently  
5 was only available from a single window  
6 manufacturer.

7 You have a letter on the docket that  
8 shows that that's not true.

9 PRESIDING MEMBER PERNELL: Okay, thank  
10 you, CBIA. I would urge you to get with staff so  
11 we can get the prices out. Prices do matter.

12 MR. RAYMER: Thank you.

13 MR. PROCTOR: John Proctor, just a  
14 response to the question of air flow with the  
15 smaller air conditioner. It's actually much  
16 easier to get adequate air flow across the inside  
17 coil with a smaller air conditioner because you  
18 can use smaller duct system and actually get it  
19 all to move.

20 He's probably referring to air changes,  
21 and smaller air conditioners actually do a better  
22 job of stirring up the air inside the house  
23 because they run longer time periods.

24 MR. WILCOX: And I'd like to respond to  
25 one thing which is when we calculate the cost per

1 energy saved on peak, the number comes out -- sort  
2 of round numbers comes out about \$250 a kilowatt.  
3 And I think the difference there maybe has  
4 something to do with the large differences in the  
5 cost estimate and maybe some other things.

6 But we don't think that the cost per  
7 kilowatt saved is outrageous at all.

8 PRESIDING MEMBER PERNELL: Okay.

9 MR. PENNINGTON: On that same point I  
10 would point out that comparing to the cost per  
11 kilowatt that is being done for the AB-970 grant  
12 programs, for example, those are one-time savings.  
13 Those programs go out and hit particular buildings  
14 or whatever on a one time basis.

15 These standards keep giving and giving  
16 and giving. Each year they impact 109,000 homes.  
17 And each year they accomplish the megawatt savings  
18 that we're estimating.

19 And so the investment here up front,  
20 it's not logical to compare to a one-time  
21 investment that you would be making at \$250 per  
22 kilowatt for the other programs. Because that  
23 only affects -- that logical comparison would only  
24 be for the first year of the standards. It  
25 wouldn't be for the second year or the 20th year

1 or the 30th year.

2 PRESIDING MEMBER PERNELL: Okay.

3 MR. PENNINGTON: I mean, the comparison  
4 is not reasonable.

5 MS. SHAPIRO: Thank you, Bill. Mr.  
6 Goldstein, would you please like to come up and  
7 talk.

8 And I will call you again in the  
9 afternoon for nonres, I saw you were very good and  
10 clear on your card, David. So just talk about res  
11 now.

12 DR. GOLDSTEIN: Okay, thank you,  
13 Rosella. And, thank you, Commissioner Pernell and  
14 Commissioner Rosenfeld for the opportunity to  
15 speak here today.

16 For the record my name is David  
17 Goldstein. I'm Energy Program Director for the  
18 National Resources Defense Council. NRDC is a  
19 national environmental organization with offices  
20 in San Francisco and over 80,000 members just in  
21 California.

22 I've been working, we've been working  
23 with the Energy Commission on Title 24 issues  
24 since Title 24 began at the Commission in 1975.

25 We're here today pursuant to the

1 California Energy Security and Reliability Act of  
2 2000. The Legislature, in passing that Act,  
3 determined that efforts to promote cost effective  
4 energy conservation had seriously lagged. And  
5 that the purpose of the Act is to provide a  
6 balanced response to the electricity problems  
7 facing the state, and refers to making significant  
8 new investments in conservation in order to meet  
9 the energy needs of the state for the next couple  
10 of years.

11 In order to do that the Commission has  
12 asked and is acting today, fulfilling this request  
13 to, quote, "insure the maximum feasible reductions  
14 in wasteful, uneconomic, inefficient or  
15 unnecessary consumption of electricity."

16 These have to be cost effective in the  
17 sense of the Warren Alquist Act. Which means not  
18 compared to the 1998 standards, as staff has done,  
19 and that may be good public policy, but compared  
20 to the situation before Title 24 began, when we  
21 were first working here.

22 And basically you could add \$10,000 to  
23 the cost of the house and still meet the legal  
24 standard of cost effectiveness.

25 So the question here is how does this



1       proposal relate to the legislative mandate of the  
2       maximum feasible reduction in unnecessary or  
3       wasteful energy consumption.

4               Well, clearly it falls short. Staff is  
5       proposing a 12 percent cut in energy consumption  
6       of houses regulated by the standard. They've  
7       shown that you can do it through one method which  
8       is the package D approach through basically tight  
9       ducts and TXVs and a few other measures.

10              And then they've said, okay, suppose you  
11       can't do it, here's another set of measures that  
12       you could do that will get you there.

13              Well, you can get there one way or you  
14       can get there another way, and they're both  
15       feasible. So, clearly it's feasible to do both at  
16       once.

17              (Laughter.)

18              DR. GOLDSTEIN: And get twice as far.  
19       We are not proposing to go beyond what the staff  
20       has done because we think there's good  
21       documentation for it, and we think that our  
22       friends at CBIA have raised some significant  
23       issues that have been responded to by the proposal  
24       being as modest as it is.

25              What we are here to argue is that there

1       are no need for further compromises; that the  
2       issues of impacts on industry are adequately taken  
3       care of by the proposal being the way it is right  
4       now.

5               Cost effectiveness, I mention, is just  
6       the icing on the cake as far as the legal  
7       requirements. But I'd point out that there's some  
8       very conservative assumptions that are built into  
9       the analysis that shows that even those measures  
10      taken on their own are cost effective.

11             For example, the Commission is assuming  
12      a 30-year life for the house. And most houses  
13      last a lot more than 30 years. And most of the  
14      efficiency measures that you use in meeting the  
15      standards will last a lot more than 30 years. The  
16      only possible exception being the windows.

17             So there are other ways where the  
18      analysis is actually even more favorable to the  
19      consumer than what the staff is proposing.

20             I'd like to comment a little bit on the  
21      issue of third party certification. This wasn't  
22      raised as an issue by the staff because no change  
23      is proposed. The Commission requires third party  
24      certification for the tight duct measure as  
25      determined in a proceeding in 1998.

1                   We strongly urge the Commission not to  
2           reconsider that decision. You did the right thing  
3           in 1998 to require third party certification, and  
4           subsequent experience throughout the nation has  
5           shown that that's what's required. We simply  
6           don't want to put contractors in the conflict of  
7           interest situation of certifying their own work.

8                   And I'm sure most of them don't have the  
9           financial strength to make amends to the people  
10          who they've shorted if it turns out that  
11          subsequent inspections shows they haven't done  
12          what they claimed to do.

13                   There's a whole body of experience  
14          nationwide that says that you can have a system  
15          that works; that people will do the honest, right  
16          thing because there's an independent third party  
17          coming to inspect. And this is the whole position  
18          that the national, as well as the state, home  
19          energy rating industry has come to.

20                   Concerning infrastructure. I think that  
21          Mark Modera made a really important point about  
22          the chicken-and-egg nature of this problem.  
23          CHEERS has been ready -- CHEERS is the California  
24          Home Energy Efficiency Rating System, it's the  
25          agency that is currently certified under CEC regs

1 to, in turn, qualify individuals to do third party  
2 inspections.

3 It could train enough people to handle  
4 these regulations with no difficulty. The main  
5 problem is why would a contractor who's trying to  
6 make a buck go out and get this training if they  
7 don't see the market. So these standards create  
8 the market for these third party certifications.  
9 And will be able to provide enough capacity to do  
10 that.

11 And as staff and contractors have  
12 indicated, even if that weren't the case, it's  
13 still possible to meet the standards. But tight  
14 ducts are the thing, they're a good thing for  
15 health and safety reasons, as well as energy  
16 efficiency reasons. And we're confident that most  
17 builders will choose to do that, given the choices  
18 that are made available.

19 Now, my colleagues at CBIA have argued  
20 that the standards would be more expensive than  
21 staff's presentation. They made one point that I  
22 think is important and valid that one needs to  
23 look at how houses that are actually built would  
24 respond, and not just at how the package D  
25 requirements would respond.

1                   And I think Ken Nittler has done that,  
2                   and shown that, yeah, it would cost a little bit  
3                   more, but it would still meet this additional  
4                   nonrequirement of the law that changes from 1998  
5                   be cost effective taken on their own.

6                   But CIBA has also proposed a couple of  
7                   other methods that we think are just structurally  
8                   wrong. Let's tie one hand behind our back and see  
9                   if we can meet the standard. Let's tie two hands  
10                  behind our back and see if we can meet the  
11                  standard.

12                  The point of a performance standard is  
13                  to provide options to the builder. You don't have  
14                  to do it just one way. I mean if you're worried  
15                  about what's the cost if people choose not to do  
16                  tight ducts, make it a mandatory measure and you  
17                  won't have that problem.

18                  We support making it a trade-off  
19                  measure. Meaning the industry has a choice to do  
20                  that or do something else. But the consequence of  
21                  giving industry more flexibility should not mean  
22                  that we assume it costs more for them to comply.  
23                  If anything, it means that it's going to cost  
24                  less, because they have a lot of different  
25                  opportunities in order to meet the standard.

1                   So, in summary, we think that the staff  
2                   analysis is modest and conservative. And given  
3                   the time constraints we can understand why they  
4                   didn't push farther than they did.

5                   So we support the adoption of it as it's  
6                   proposed. Thank you.

7                   MS. SHAPIRO: Okay, Mike Gabel.

8                   MR. GABEL: I think I'd prefer to have  
9                   Bill Mattinson speak --

10                  MS. SHAPIRO: Okay. Michael, are you  
11                  still going to want to talk, though?

12                  MR. GABEL: Just for one minute.

13                  MS. SHAPIRO: Okay.

14                  MR. MATTINSON: Good morning, I'm Bill  
15                  Mattinson representing CABEC, the California  
16                  Association of Building Energy Consultants. I've  
17                  been appearing here for many many years as Chair  
18                  of our Residential Committee. Mike is our current  
19                  Chairman, and has a few comments to add.

20                  What was just handed up to the dais was  
21                  the document that we submitted to the docket  
22                  electronically yesterday, so you may not have had  
23                  a chance to see it. I will not read it. I want  
24                  to just highlight a couple of points that we feel  
25                  are worth considering right now.

1                   First off, I want to say that CABEC is  
2                   pleased and grateful for the proposals that have  
3                   been made by staff and their contractors, and we  
4                   support them 100 percent.

5                   In agreement with Dr. Goldstein, we have  
6                   a couple of comments on things that we believe  
7                   should be done beyond what has been recommended.

8                   But first I want to tell you that in all  
9                   the years we've been coming here we've tried to  
10                  establish a means for developing a position and  
11                  evaluating the standards that are coming before  
12                  us, and we've come upon four criteria that we look  
13                  at first.

14                 And they are very simple: Are the  
15                 standards that are proposed technically correct.  
16                 Are they fair. Do they truly save energy. And  
17                 finally, are they enforceable.

18                 And I'm pleased to say that we believe  
19                 the answer to all four of these questions is a  
20                 resounding yes. We believe they're technically  
21                 correct not only in that they recognize the two  
22                 largest energy losers in the house being low  
23                 performance glass and leaking nonperforming ducts,  
24                 and address them appropriately by putting them in  
25                 the standard prescription package measures.

1                   And then a third item that hasn't been  
2           discussed is that there's a realistic downrating  
3           of the efficiency of air conditioners based on  
4           real California conditions. This is internally  
5           built into the software and it will recognize that  
6           upgrading the SEER on a numeric basis doesn't  
7           necessarily yield the kind of savings that one  
8           would expect. I think that's a standard belief  
9           and long overdue. So, technically correct,  
10          agreed.

11                   Are they fair. We think they are.  
12          Echoing what others have said before, I think it's  
13          of great importance that consumers who expect  
14          their new homes to be energy efficient and cost  
15          effective get that.

16                   And these standards deliver a product to  
17          the buyer, to the consumer, to the California  
18          homeowner that will save them money over the life  
19          of the home, and that is no more than what they  
20          deserve.

21                   We think that for the building industry  
22          they are also fair because they preserve the great  
23          flexibility that I personally believe has made  
24          California's building standards the most  
25          effective, useful and beneficial in the entire



1 country.

2 Flexible tradeoff approach is key to  
3 that. We've retained that. No one is going to be  
4 forced to do third party certification if they  
5 choose to adopt another solution, whether it's  
6 high performance windows or some combination of  
7 measures.

8 And we think the first costs are again,  
9 as Dr. Goldstein pointed out, not necessarily the  
10 biggest issue for consumers, but they are an issue  
11 for builders, and we think that a first cost of  
12 under \$1000 a home is easily achievable.

13 I did not put in our submittal to the  
14 docket a document I just want to briefly refer to.  
15 But as a practicing energy consultant, myself,  
16 since the adoption of the standards, I took a  
17 quick look at a handful of homes that we have  
18 recently analyzed for Title 24 compliance under  
19 the '98 residential standards, and several climate  
20 zones around the Bay Area, climate zones 1, 2 and  
21 4.

22 For each of those homes it was easy to  
23 find multiple solutions, some which required  
24 verification, some which didn't. My cost data  
25 based on what we advised and worked with builders

1       on an everyday basis, came out very close to what  
2       Ken Nittler's report did. So I think that they  
3       are fair.

4               Do they save energy, I think they  
5       obviously save energy. No one has contested that  
6       contractor in staff's position of 12 to 14 percent  
7       savings will be achieved. I think that's agreed.

8               Are they enforceable. We do think  
9       they're enforceable because there are many  
10      compliance solutions. Builders do not need to do  
11      HERS verification. And if they choose to, we've  
12      had those procedures in place since 1998.

13              In fact, when the '98 standards were  
14      under discussion several of the parties, the  
15      stakeholders suggested that if duct losses, for  
16      example, were so huge, why didn't we make them  
17      part of the prescriptive packages then.

18              The argument given by CBIA was that we  
19      need time to transition. We need to develop the  
20      procedures, the protocols, the verification, the  
21      HERS raters, to move to that in the next  
22      standards. And several of us agreed, okay. Let's  
23      give you that time. Let's do it in the next  
24      standards.

25              Well, this is the next standards. The

1       table's been set. Ducts are still extremely  
2       leaky. We need to stop that. We think it's  
3       enforceable with what we've already got. We're  
4       not adopting any new criteria to do that.

5               As far as the number of HERS raters,  
6       I'll just say I agree with the previous few  
7       comments.

8               As far as going beyond what the  
9       standards propose, we think there are a couple  
10      things for consideration that probably can't be  
11      addressed this time, but we should keep in the  
12      back of our mind.

13              One thing is the builders have often  
14      complained to CBIA, and in particular has  
15      complained that the onus of saving energy has been  
16      placed on the new home builder. And in the  
17      confines of this building and this room, in fact,  
18      that's true.

19              We suggest that we should go beyond that  
20      and, if possible, I recommend that the Commission  
21      mandate that replacement windows come under the  
22      standards, and that replacement windows installed  
23      should meet the prescriptive package requirements  
24      for that climate zone.

25              In other words, the biggest energy

1 losses in the existing homes, we should not allow  
2 homebuilders to replace their terrible windows  
3 with poor replacement windows, when for very few  
4 dollars and with great cost benefit, they can put  
5 high performance windows comparable to what are  
6 being put in new homes.

7 We also suggest the point of sale houses  
8 should be subject to upgrades where feasible and  
9 accessible and simple things like ceiling  
10 insulation, floor insulation. But, again, that is  
11 only to say that would could have gone a lot  
12 further. We recognize that staff left several  
13 things on the table that are gim-me's already for  
14 the building industry. We applaud them for that  
15 because it provides the flexibility to builders.

16 And again, we urge you to support and  
17 adopt the standards as proposed. Thank you.

18 MS. SHAPIRO: Thank you so much. Mr.  
19 Gabel, are you going to talk right now? You got a  
20 minute.

21 MR. GABEL: I'm Mike Gabel, currently  
22 Chair of CABEC. Additional comments, I support  
23 everything that Bill Mattinson said. I think that  
24 from the implementation date point of view I don't  
25 think that the industry needs more than six months

1 from January to implement these standards.

2 I'd be cautious to go to implement these  
3 standards much before May 1st. I think there's an  
4 awful lot of work that has to be done. And I  
5 would ask the Commission to consider carefully the  
6 implementation date from the point of view of  
7 publishing standards.

8 Trainings. I think there has to be some  
9 public funds expended in training everyone  
10 involved. These are somewhat significant  
11 standards. Change that can be adopted and adapted  
12 too, I should, say, but I think that we all need  
13 some time to fully understand as the industry  
14 does. And we all need some time, so I just want  
15 to make sure the Commission understands that.

16 MS. SHAPIRO: Okay, thank you very much,  
17 Mr. Gabel. Eric Eilar from Centex?

18 MR. EILAR: Eilar.

19 MS. SHAPIRO: Eilar.

20 PRESIDING MEMBER PERNELL: While Eric is  
21 coming up, we're going to take lunch at 1:00. So  
22 we have an hour to continue this for residential.  
23 And lunch will probably be a half an hour. So  
24 this is going to be pretty quick.

25 MR. EILAR: Thank you, Commissioners.

1       My name's Eric Eilar. I represent Centex Homes.  
2       I'm from Los Angeles, but I speak for our offices  
3       throughout the state.

4               Centex is building about 3500 homes in  
5       California this year. And I'll not talk about  
6       some of the items in the letter I sent that have  
7       already been brought up here, but I would like to  
8       provide some direct feedback on the cost for  
9       implementing these measures.

10              I'm here representing Centex partly  
11       because I'm most informed on these programs having  
12       put together budgets and packages and scopes of  
13       work for two new projects that are under  
14       construction right now, using tight ducts and low  
15       E glass.

16              Under Southern California Edison's  
17       ComfortWise program, I was able to make the  
18       numbers work between the rebates from Edison and  
19       the Gas Company. And the fact that one of the  
20       cities that we're building in, the City of Santa  
21       Clarita, has a city council mandated program to  
22       implement what they call their CHEERS program.

23              And so they were obligated to expedited  
24       plan processing. So between all those  
25       ingredients, the numbers worked.

1                   But also my -- the direct costs to the  
2           builder are about \$1150, which is offset by those  
3           rebates, as follows: Low E squared glass which is  
4           obviously the most cost effective measure; on a  
5           2000 square foot house costs us about \$400 above  
6           and beyond just regular dual pane.

7                   The radiant barrier ceilings which --  
8           roofs, that wasn't part of the program I  
9           implemented in these ComfortWise houses, but in  
10          checking local suppliers there's a manufacturers  
11          representative here in the room. And one of our  
12          other offices that gave me some feedback, it's  
13          about \$400 a house. It's essentially about \$4 for  
14          a sheet of roof sheeting, and there's  
15          approximately 100 sheets on a given two story  
16          house.

17                  The next item is tight ducts. That was  
18          one of the items that included in the ComfortWise  
19          houses that I implemented. That's costing us  
20          about \$350.

21                  There's an added cost to the HVAC  
22          subcontractor to do more meticulous work to seal  
23          the joints with mastic and to guarantee that those  
24          ducts are going to be tight. And then he charges  
25          a couple hundred dollars to go back and duct blast

1           and test each house. So there's a cost --

2                       PRESIDING MEMBER PERNELL: Let me stop  
3           you there because this is -- I think this is a  
4           problem for me. You have to pay the  
5           subcontractor, the HVAC subcontractor more money  
6           to do the job right?

7                       MR. EILAR: We have to pay him more  
8           money to do the job better. It's more meticulous  
9           work.

10                      The same subcontractors work and tested  
11           on houses, well, duct blasted houses that the  
12           joints weren't sealed, had a 14 percent leakage  
13           factor, which is pretty good. It's better than  
14           the industry has been.

15                      But, to verify the sealing and to assure  
16           that it's going to leak no more than 6 percent,  
17           he's got to do his work more meticulously and do  
18           added work.

19                      The tight ducts met that requires any  
20           field joint, cut joint to be painted with a  
21           mastic, a sealant, and all the boot joints, also.  
22           So it's more work. It's more involved for them.

23                      PRESIDING MEMBER PERNELL: Okay.

24                      MR. EILAR: There's also CFM performance  
25           involved.



1                   For TX valve modifications on the coils,  
2                   we estimate that to be about \$100. And a factor  
3                   that might enter into that is the fact that with  
4                   the small orifice actuators, a lot of  
5                   manufacturers have not put in start capacitors on  
6                   the compressors because the high pressure side of  
7                   the refrigerant equalizes out with those.

8                   These TX valves that are going to be  
9                   added will need to be equalizing TX valves so that  
10                  there's no compressor seizures when the compressor  
11                  starts against a high pressure.

12                  Another item is third party inspection  
13                  which we're paying about \$150 for. That might  
14                  come down, but a point of -- I'd like to make in  
15                  disagreement with some of the comments just made  
16                  about HERS inspectors, is just today we checked on  
17                  the website and they're, according to the HERS  
18                  website, there's 56 certified inspectors.

19                  And if we take the approximately 120,000  
20                  new homes built; divide that by 12 months of the  
21                  year, that's 10,000 a month; divided by 20 days,  
22                  that's 500 houses a day. So, that equates to  
23                  approximately I would say about 100 inspectors  
24                  needed.

25                  And apparently many of the 56 inspectors

1       currently certified are involved in retrofit  
2       programs for energy efficiency mortgages and such,  
3       so I think although it wouldn't take long for new  
4       HERS inspectors to come on board, right now there  
5       might be a shortage.

6                       So, --

7                       MS. SHAPIRO:   Eric, excuse me.  I think  
8       that they don't have to inspect each and every  
9       house.  I think that it's a spot check, sort of a  
10      random sampling.  So, --

11                      MR. EILAR:   Right.

12                      MS. SHAPIRO:   -- okay.

13                      MR. EILAR:   Okay, it might not be quite  
14      that many, but --

15                      MS. SHAPIRO:   Okay, I just wanted to  
16      make sure you didn't think it was every single  
17      building.

18                      MR. EILAR:   No, they don't have to duct  
19      blast each house, but a random sampling, I agree.

20                      And I would agree that third party  
21      inspection is important.  A homebuilder like us  
22      has third party inspectors for other parts of the  
23      house like the foundation, sometimes the roofing.  
24      Having implemented this in the two new  
25      neighborhoods that are under construction, there

1       was a learning curve for us and the building  
2       department.

3               And they're glad that we have third  
4       party inspections because they don't want to be  
5       the ones that have to go and do all this. And I  
6       think that it's important that third party,  
7       instead of the subcontractor, because he has a  
8       conflict of interest in inspecting his own work.

9               In summary, Centex Homes wants to do  
10      what's right for the customer. We're an energy  
11      efficient company. Centex has a renewable forest  
12      policy. And personally I've been in the industry  
13      for 30 years and have been watching and  
14      participating and I've been an installer of energy  
15      efficient products, solar heating and such, over  
16      the years. So we want to do what's right.

17              But I think that some transition into  
18      these programs might be better. And finally, I'm  
19      here from a big builder, and I'm the only one that  
20      even had any information on these proposed  
21      measures. And I got the word out and I'm the only  
22      one that was able to come.

23              And there's probably a lot of other  
24      builders and people in the industry that, number  
25      one, don't even know what's on the table. And

1       number two, would have some comments because this  
2       affects budgets and houses and construction and  
3       sales and marketing pro formas and plans.

4               And if it's not done well, there can be  
5       a lot of confusion and a lot of, you know,  
6       cheating and trying to, you know, get around the  
7       program when it comes on board.

8               So, I think looking at the data a little  
9       bit more carefully, and making sure that a well  
10      constructed approach would be best.

11              Thank you. Do you have any questions?

12              PRESIDING MEMBER PERNELL: All right,  
13      thank you.

14              MS. SHAPIRO: Any questions?

15              MR. PENNINGTON: Couple quick ones. I  
16      presume that duct design is included in your costs  
17      for the duct job, the \$350 includes duct design?  
18      From an air flow vantage point.

19              MR. EILAR: No, our duct design is part  
20      of our title 24 fees that are independent of these  
21      costs.

22              MR. PENNINGTON: The other question I  
23      had is related to third party verification, you  
24      said it was \$150?

25              MR. EILAR: Um-hum.

1                   MR. PENNINGTON: Is that -- you're doing  
2                   \$150 on every house?

3                   MR. EILAR: Yes.

4                   MR. PENNINGTON: There's no sampling  
5                   that you're doing?

6                   MR. EILAR: Well, it's a random  
7                   sampling, but they're coming out and inspecting  
8                   every house. And verifying that the work is -- a  
9                   visual inspection and a random sampling.

10                  So, actual duct test of every seven  
11                  houses. Each model is being tested, and then the  
12                  first half a dozen of production is being tested,  
13                  and then after that it will be a random sampling.

14                  MR. PENNINGTON: And that \$150 is not  
15                  spread over more than one house, --

16                  MR. EILAR: No.

17                  MR. PENNINGTON: -- is that what you're  
18                  saying? Okay.

19                  MR. EILAR: It's for each, it ends up  
20                  being for each house.

21                  MS. SHAPIRO: Thank you very much. Gary  
22                  Fernstrom, are you ready?

23                  MR. FERNSTROM: Commissioner, Staff,  
24                  interested parties, I'm Jerry Fernstrom from the  
25                  Pacific Gas and Electric Company. PG&E serves

1 over 4 million residences in northern and central  
2 California.

3 And as pretty nearly everyone knows it's  
4 facing unprecedented increases in the cost of  
5 energy now.

6 PG&E would like to commend the staff and  
7 its consultants for the work they did. It  
8 supports the improvements in the standards. It  
9 supports adoption of the proposal. And it  
10 supports that adoption as quickly as possible.

11 PG&E has asked the Public Utilities  
12 Commission for recovery of approximately \$3.5  
13 billion in energy costs that it has paid for the  
14 procurement of energy that it hasn't recovered  
15 from its customers.

16 It's likely that this cost will go into  
17 rates and will be recovered in the coming years.  
18 Therefore, it's critically important for our  
19 customers that they be offered the opportunity to  
20 live in new homes that are as efficient as  
21 possible.

22 We believe that the infrastructure does  
23 exist to accommodate quick adoption of these  
24 standards without interfering with the operation  
25 of the building industry.

1                   And it would be a disservice to the  
2           public not to adopt these standards. I think this  
3           can be seen by a brief history lesson.

4                   I live in a home that's slightly over 30  
5           years old. The builder that built that home made  
6           the decision that it was not a wise investment to  
7           insulate that home. So the home has no  
8           insulation, other than what I supplied by  
9           retrofit. It has single pane windows with  
10          aluminum frames.

11                  And right now we're essentially sitting  
12          in the same position that that builder was 30  
13          years ago. It's obvious to me that given the  
14          increase in energy price over the last 30 years,  
15          and the fact that I'm still living in the home,  
16          that far less was invested in energy efficiency  
17          than was appropriate.

18                  I think we have the opportunity today to  
19          look ahead to the next 30 years and make the  
20          decision that's right for consumers that are going  
21          to be living in homes built today 30 years in the  
22          future.

23                  Thank you.

24                  PRESIDING MEMBER PERNELL: Thank you.

25                  MS. SHAPIRO: Thank you, Gary. Rob

1 Hammon.

2 DR. HAMMON: Good morning,  
3 Commissioners, Staff, audience. Thank you for  
4 giving me the time to speak.

5 I just wanted to point out --

6 MS. SHAPIRO: Rob, please identify  
7 yourself for the record.

8 DR. HAMMON: Oh, I'm sorry, I'm Rob  
9 Hammon. I'm a Principal in ConSol.

10 I just wanted to point out ConSol did  
11 the analysis for CBIA, and I just wanted to point  
12 out the critical difference between their analysis  
13 and the CBIA analysis is that we tried to take a  
14 practical approach on how the homes may comply  
15 with the standards, and what the costs are that go  
16 along with that.

17 As opposed to what would be the  
18 additional costs of the package features, which  
19 may not be relevant, or available to the homes as  
20 they're being built.

21 Also wanted to mention in terms of  
22 downsizing that the builders need, when they're  
23 doing downsizing, first of all sizing is a  
24 relatively new or as a mechanical design, it's a  
25 relatively new concept to residential



1 construction.

2 We wholeheartedly support it and provide  
3 that as a service to our clients. But it's a very  
4 small portion of the market that uses mechanical  
5 designs.

6 When they do use a mechanical design,  
7 which is the only way that they can practically do  
8 downsizing, they need to use a standard practice.  
9 The most commonly used standard practice is the  
10 ACCA set of manuals. And those manuals and those  
11 procedures do not provide for reduced size due to  
12 reduced duct leakage. Nor do they provide for a  
13 radiant barrier, reducing the size of the air  
14 conditioner according to a radiant barrier.

15 These are changes that need to be made  
16 in these standard practices. ACCA is moving in  
17 that direction, however that's not going to be  
18 done or ready for the industry by early next year.

19 Our company has been working with the  
20 industry and the Energy Commission to provide  
21 training to the industry, and I just wanted to let  
22 you know that there's a discrepancy between the  
23 implementation of the standards in the field  
24 compared to what's anticipated on paper.

25 And we're making strides to shrink that

1 difference. But it's an important one. And it's  
2 a problem in the field that, as the code becomes  
3 more complicated and more stringent, there's the  
4 opportunity for additional problems.

5 If I may, I'd like to just read a few  
6 sentences from an email message to the  
7 Commissioners from the San Diego Chapter of ICBO,  
8 which is the International Congress of Building  
9 Officials, quote:

10 "The real problem with energy efficiency  
11 standards as they exist today is not that they  
12 don't have enough of them, or that they don't save  
13 enough energy, but that they are too confusing and  
14 complicated for adequate enforcement under the  
15 existing provisions. New regulations add to this  
16 burden by restricting construction in ways that  
17 are incompatible with current building design."

18 "In addition, insufficient time for  
19 training of plan checkers and inspectors has been  
20 allowed. Adding additional unfunded inspections  
21 will only result in less conformance with these  
22 standards, not more."

23 That's my concern. If we move too far  
24 too fast we're going to broaden the gap between  
25 the compliance with the standards and the

1 standards as they exist.

2 In regards to that and the importance of  
3 third party inspections I brought along a few  
4 graphs that I'd like to share with you.

5 As a contractor for builders we go out  
6 on a daily basis and do our random checks of  
7 certified duct systems. The data that I'll show  
8 you today is the results of our tests of certified  
9 duct systems, that is systems that are certified  
10 to leak less than 6 percent.

11 MS. SHAPIRO: And you're doing this as a  
12 third party inspector, is that right, Rob?

13 DR. HAMMON: That's correct. That's  
14 correct. This first graph is from one  
15 subcontractor that's been doing this, been  
16 supplying certified tight ducts for quite some  
17 time. Has good experience. Does generally a very  
18 good job.

19 But as you can see, all of the dots  
20 above the line are tests that we've done that did  
21 not pass. Now, I'll tell you that we work with  
22 the subcontractor and make sure that every one of  
23 these is corrected, and that they do ultimately  
24 pass.

25 But I think you can see from that chart

1       that there is a discrepancy between what's  
2       certified and what passes.

3                Could I see the next one. I just have  
4       two more charts of different subcontractors,  
5       different subdivisions. You can see there's some  
6       large discrepancies there.

7                Next chart, please. In this one, in  
8       fact, despite contractual language to the  
9       contrary, the subcontractor installed an un-  
10      ducted, that will never provide a low duct  
11      leakage. That was corrected. The home did  
12      ultimately pass.

13               PRESIDING MEMBER PERNELL: Mr. Hammon,  
14      are you advocating for third party certification?

15               DR. HAMMON: Yes, sir. I --

16               PRESIDING MEMBER PERNELL: Okay, that's  
17      fine --

18               DR. HAMMON: -- I believe --

19               PRESIDING MEMBER PERNELL: -- that's  
20      fine. You're all right.

21               DR. HAMMON: I believe the third --

22               (Laughter.)

23               DR. HAMMON: I believe it's a necessary  
24      component, but I do want you to understand that I  
25      do think that there's a limited resource available

1 to do that at this time.

2 I agree that there are about 56  
3 certified CHEERS raters at this point in time, at  
4 least that's the information available to us. And  
5 I agree with the earlier estimate that it would  
6 take at least 100 to satisfy the market.

7 I think that the market will grow, and  
8 that the demand will help provide qualified third  
9 party certifiers in the future, but we don't have  
10 them available immediately. So there needs to be  
11 transition.

12 Finally, one last comment, I would just  
13 like to agree with Commissioner Pernell, that a  
14 major problem that we have in terms of the energy  
15 crisis in California is the way the bidding is  
16 done, as opposed to generation.

17 And I think we just need to keep that in  
18 mind when we're looking at the cost effectiveness  
19 of these standards. Thank you very much.

20 PRESIDING MEMBER PERNELL: Thank you.

21 MS. SHAPIRO: Mr. Hunt, you have nonres  
22 and res. Do you want to talk now or wait and be  
23 called in the afternoon?

24 MR. HUNT: I'll wait, --

25 MS. SHAPIRO: Thank you very much.

1 MR. HUNT: -- available for questions.

2 MS. SHAPIRO: Mr. Ware.

3 MR. WARE: Good afternoon,  
4 Commissioners. My name is David Ware. I am the  
5 Manager of Codes and Regulations for Owens  
6 Corning.

7 I apologize if I'm associated in my  
8 representation of being part of the Eagle  
9 Manufacturers of insulation products, as Mr.  
10 Nittler so alluded to.

11 (Laughter.)

12 MR. NITTLER: That was tested duct  
13 problems.

14 MR. WARE: Okay. Ken and I obviously  
15 are friends.

16 (Laughter.)

17 MR. WARE: My company, however,  
18 manufacturers many products for both residential  
19 and nonresidential buildings, even though our icon  
20 is associated with insulation in particular.

21 I have very few issues that I'd like to  
22 address, and so let me just dive into this. My  
23 major concern is that the current revisions to the  
24 standards rely too heavily upon controls and  
25 equipment and modeling procedures.

1           Having said that, let me just say that  
2           Owens Corning, indeed, does support the analytical  
3           work and the measures that are proposed. However,  
4           I think they fall short in looking at the full  
5           breadth of opportunities that could be addressed  
6           in regards to the AB-970 legislation.

7           There was a time when good cost  
8           effective design started with insuring thermal  
9           integrity of the building envelope. Recognizing  
10          high performing windows is a part of that.

11          But a significant portion of the  
12          estimated energy savings for these revisions is  
13          attributable to controls, equipment efficiencies  
14          and modeling procedures.

15          My first comment is primarily to raise  
16          the minimum ceiling insulation R value to R-30.  
17          Currently we have significant amount of  
18          information from insulation contractors throughout  
19          the state that there is tradeoffs occurring in  
20          insulation, going down to the minimum R-19 ceiling  
21          insulation level that's allowed. Even though  
22          package D requirements are based upon an R-30.

23          So my recommendation is to move the  
24          minimum ceiling insulation R value to R-30. This  
25          is supposed by continuous telephone surveys that

1 Owens Corning conducts twice a year throughout the  
2 country, including California, indicating that R-  
3 30, while it is used, is traded off in a  
4 significant way for other building features. And  
5 we would like to see the thermal integrity of the  
6 envelope maintained.

7 R-30 is also supported by the  
8 recommended R values by the Department of Energy.

9 My second comment has to deal with the  
10 modeling parameters and installation criteria for  
11 radiant barriers. I am in support of using  
12 radiant barriers as part of the standard and  
13 energy design budget. However, if indeed that  
14 element helped move the market in the direction of  
15 radiant barriers, or other features that proved  
16 cost effective for a builder, that meets that same  
17 energy savings criteria.

18 There needs to be a tightening of the  
19 modeling and installation criteria for radiant  
20 barriers. In particular, there's the ACM rules  
21 and installation criteria do not delineate what  
22 must be done for cathedral ceilings of the  
23 proposed design when a radiant barrier is used.

24 Technically the installation procedures  
25 for radiant barriers only apply to attic



1 conditions. So, what I'm advocating is that there  
2 are rules set up in the ACM manual that indicates  
3 that when a roof has a cathedral ceiling that  
4 indeed the radiant barrier credit cannot be used  
5 for that portion of the roof.

6 Generally the new package D requirements  
7 are overly burdensome for builders and enforcement  
8 officials. As David Goldstein indicated, we have  
9 two sets of procedures. One has window  
10 technologies and other things. And then we have  
11 an alternative that we can use.

12 Duct ceiling conditions that are  
13 verified by third party verification, or an  
14 alternative.

15 If we've learned anything from the  
16 compliance options that were approved for the last  
17 go-round of standard revisions in regards to  
18 building diagnostics, those are not used often  
19 enough by builders.

20 As a consequence I believe what's going  
21 to happen is the alternative may indeed be used  
22 either until there's better market transformation,  
23 some of the other issues that other speakers have  
24 discussed, or some other mechanism used as an  
25 incentive to insure that that actually happens.

1                   So, to help bridge that gap I'm  
2           recommending that there's an increase in the duct  
3           R value from 4.2 minimum to R-8. This is  
4           supported by the currently approved duct R values  
5           in the international energy conservation code.

6                   Lastly, I would like to comment, at the  
7           risk of sounding somewhat half baked, that an  
8           alternative to the individual measures that are  
9           being discussed and bantered around and the  
10          validity and supporting cost effective data around  
11          them, an alternative that the Commission could use  
12          that I did bring up at the September 25th hearing  
13          is the Commission could establish a performance  
14          threshold increased above current practice,  
15          current standards.

16                  The advantage of that is that it allows  
17          the marketplace and builders to determine what's  
18          cost effective for them. In other words set, for  
19          instance, a 20 percent better than current code,  
20          as my letter indicates, as an example.

21                  It moves these discussions and this  
22          forum away from the validity of the individual  
23          analyses sets that were used, and it allows  
24          builders to determine and pick and choose measures  
25          that best meet their market conditions and

1 economic parameters.

2 In addition, it allows the Commission to  
3 monitor programs and to monitor the kinds of  
4 measures that are being used out in the  
5 marketplace. And it allows the Commission time to  
6 deal with competing issues that have already been  
7 addressed today.

8 There are already examples of programs  
9 out in the marketplace that are working. And  
10 without strong support from the Commission we,  
11 such as Owens Corning program, Greenstone's  
12 program or the ComfortWise program have to  
13 scramble and show builders the merits of those  
14 performance programs.

15 So there is already some infrastructure  
16 already set to doing that, and working with  
17 builders. So that is an alternative I think that  
18 the Commission should entertain in this  
19 proceeding.

20 That's my last, thank you.

21 MS. SHAPIRO: Thank you, Mr. Ware. Mr.  
22 Nittler.

23 MR. NITTLER: A quick comment related to  
24 baking, since Dave brought it up. His suggestion  
25 that you could just go 20 percent, the difficulty

1 is that there's no way to apply that 20 percent to  
2 the prescriptive approach, which is the basis of  
3 the standard.

4 It would work on a performance basis.  
5 What do you do for the rest of the marketplace?

6 MS. SHAPIRO: And how do you prove that  
7 it's cost effective. Thank you so much.

8 Mr. Burt.

9 MR. BURT: I'm Robert Burt representing  
10 Insulation Contractors Association. First, let me  
11 strongly congratulate and support your elimination  
12 of the interior shade recommendation and  
13 alternate. Those with long memories may remember  
14 that I caused some gas pains here at the last  
15 hearing by referring to the justification for that  
16 as intellectual bankruptcy.

17 I'm glad that you have not gotten out of  
18 it. And I hope you stick to it through the whole  
19 process.

20 My second comment is that I believe that  
21 the costs shown on page 4 and 5 of the thick  
22 document, volume one, represent very optimistic  
23 estimates of what our future situation will be.

24 To look at the electric cost, it starts  
25 now with a cost which PG&E will surely assure you

1 is rather low. All you have to do is go to the  
2 webpage for the power exchange and you'll find the  
3 typical prices right now are running in the 18, 19  
4 cents.

5 That's being paid, sooner or later  
6 somebody's going to have to pay it. And the  
7 rather steep drop, and then a long flat line going  
8 thereafter, as I see it, assumes that either coal  
9 and nuke will become a lot more prevalent in this  
10 electrical supply than it now is, or else that  
11 line is wrong.

12 The other, I look at the natural gas and  
13 I see a steep drop. And what bothers me is the  
14 fact that U.S. is pretty widely pinpricked by  
15 natural gas drilling. We are going to have to  
16 start depending on others.

17 Others include the blue-eyed Arabs of  
18 Canada who did not hesitate to charge us exactly  
19 what the equivalent price of oil was when the last  
20 crisis came along.

21 And the Mexicans, who we gratuitously  
22 insulted the last time that we needed gas, and  
23 they continued to flare gas rather than send it to  
24 us.

25 So I don't think that we can assume that

1 gas will go down to a low price and stay there for  
2 a long time.

3 And in that connection I would point out  
4 the comment that was made very briefly, support  
5 that the CPUC's cost analysis, which is based upon  
6 an analysis that says that as long as we have a  
7 pricing system where the whole lot of customers  
8 pay the highest price that is hit by the bidding  
9 at any given hour, then conservation is a lot more  
10 valuable than we have been thinking it.

11 A rigorous analysis of that was provided  
12 by Mr. Marcus to the PUC. And so I recommend the  
13 CPUC's future cost analysis as more likely, at  
14 least, until we change our system for buying  
15 electricity.

16 Finally, I will support third party  
17 verification and point out further that a plan  
18 check is not a building. There's an awful lot of  
19 California where a plan check is about all that  
20 happens as far as making sure that what actually  
21 goes in the building. And I can confirm that by  
22 every study that I've seen where they went out and  
23 actually looked at real buildings. They found  
24 that they were not in full accordance with the  
25 current code.

1                   And two comments on what was recently  
2                   said, improving your performance replacement for  
3                   windows, I have a sincere caution there.

4                   Many of our members do replace windows  
5                   retrofit. And there is a problem in a retrofit  
6                   window and that is that if you make a more  
7                   efficient window it has a wider frame. And  
8                   therefore you do not have as big an opening,  
9                   what's referred to in the code as egress.

10                  So if we simply say tear out this window  
11                  and replace it with current code, what current  
12                  code for egress would, in effect, mean that you  
13                  have to make major changes in the frame, which  
14                  would vastly increase the cost of this job.

15                  Normal window replacement says you pull  
16                  a window and put in equal sized window in place of  
17                  it. If you do that you're not going to have quite  
18                  as much egress. And the egress is provided in  
19                  bedroom windows so that people can get out in case  
20                  of earthquake or fire.

21                  So I recommend that if you do consider  
22                  replacement window standard, that you discuss with  
23                  the building standard people how these replacement  
24                  windows can meet egress standards.

25                  And finally I would -- Owens Corning is

1       one of our valued suppliers. I would support most  
2       of the comments he made, but I would agree that  
3       with a sotto voce comment made near me in the  
4       audience that "ques custodia ipso custodas", when  
5       we have a question of performance standard how do  
6       we insure it, and if you built the house and it  
7       doesn't meet the standard, I can tell you from the  
8       costs of retrofit, you now have a fabulous cost to  
9       go back there and make it meet a standard.

10               So how many people would have the  
11       warranty ability to meet that kind of potential  
12       cost.

13               With that, I conclude my comments, thank  
14       you.

15               PRESIDING MEMBER PERNELL: Thank you.

16               MS. SHAPIRO: Next will be Doug Hoffner.  
17       And, Mr. Trimberger, do you want to talk at the  
18       same time as him?

19               MR. TRIMBERGER: No.

20               MS. SHAPIRO: No, okay, sorry.

21               (Laughter.)

22               MS. SHAPIRO: Mr. Hoffner.

23               MR. TRIMBERGER: I don't want to steal  
24       his thunder.

25               MR. HOFFMAN: Thanks, Tom.



1 MS. SHAPIRO: Then you'll be next,  
2 though.

3 MR. HOFFNER: This is Doug Hoffner  
4 representing the California Building Officials.  
5 What I really wanted to speak about, maybe ask  
6 some questions, but approving time of  
7 implementation, it sounds like it's been discussed  
8 a little bit.

9 I think CALBO's concerns regarding some  
10 of the standards that Bob Fiock and Tom Trimberger  
11 will be speaking shortly after me. But, the  
12 concern about training of the local building  
13 officials, 540 or so local jurisdictions in the  
14 State of California. Who will be providing that  
15 training? How quickly will they be trained in  
16 order to implement these new standards and be  
17 available to react to what is being adopted, or  
18 will be adopted shortly.

19 So those are some of my concerns. We  
20 also are looking at like 180-day implementation  
21 kind of timeframe. Is that going to be -- is that  
22 the effective date? Sounds like there's some talk  
23 about that earlier today of a later date.

24 But we also want to talk about one of  
25 the tools available for the local building

1 departments, compliance tools. Those are all  
2 things that we're interested in. And Tom, I  
3 think, will be speaking more to the specifics with  
4 regards to some of these other actual standards  
5 that we're talking about today.

6 MS. SHAPIRO: Doug, I have a question.

7 MR. HOFFNER: Yeah.

8 MS. SHAPIRO: In an earlier letter we  
9 got from CALBO you were recommending 90 days. Now  
10 are you saying -- are you changing how many days  
11 that you need to have from the date of adoption to  
12 the effective date to be a longer time?

13 MR. HOFFNER: That initial letter was  
14 put forward by Bob Fiock and it mentioned 90 days.  
15 It talked about the compliance tools, as well.

16 We think that must include training. I  
17 don't know exactly how far we can get it if, let's  
18 say January 3rd is the date that, you know, go  
19 through compliance. And then you go to the  
20 Building Standards Commission. Then you adopt on  
21 February 7th is my understanding from the  
22 timeframe.

23 When does training start? How do we get  
24 to all the jurisdictions in California in an  
25 expedient timeframe so that they are allowed and

1       able to understand what's going on so that when  
2       the standards are adopted at a later date, then  
3       implemented, they're ready.

4               So, I think there's a lot of questions  
5       and I don't know if today is the timeframe we  
6       could decide those or who is deciding those,  
7       but --

8               MS. SHAPIRO: We want to hear your  
9       opinion.

10              MR. HOFFNER: So I think it would be  
11       longer. Just doing the math on, you know, getting  
12       all the information out to the building  
13       departments, deciding who is going to be providing  
14       the training, putting that information together  
15       and the manuals.

16              You need a certain amount of time just  
17       to let them know when classes are available. And  
18       is there a cost for the locals --

19              PRESIDING MEMBER PERNELL: Okay, we are,  
20       you know, you're making the same point that many  
21       have made, and we are mindful of some transition  
22       period. And we certainly want to be accommodating  
23       to be able to get the information out so that, you  
24       know, these various stakeholders can comply,  
25       including the building departments.

1                   MR. HOFFNER: We appreciate that. Thank  
2                   you.

3                   MR. PENNINGTON: Could I make a couple  
4                   of comments, please.

5                   MS. SHAPIRO: Okay.

6                   MR. PENNINGTON: We are planning to do  
7                   extensive training starting in January, and  
8                   utilities, as well, have committed to doing  
9                   extensive training for the building industry and  
10                  building officials.

11                  It probably should be noted that we're  
12                  not talking about anything mysterious here. We're  
13                  not imposing new, strange features. These are  
14                  features that have always been around, the  
15                  building officials are familiar with them.

16                  The exception, you might say, is related  
17                  to field verification. And this isn't something  
18                  that we're imposing on the building officials.  
19                  They don't have a new obligation related to field  
20                  verification.

21                  In fact, that was the purpose of setting  
22                  up the infrastructure for field verification so it  
23                  wouldn't fall to the building officials to learn,  
24                  you know, how to do diagnostic testing themselves,  
25                  and how to acquire equipment themselves and so

1       forth.

2                   PRESIDING MEMBER PERNELL:   Right, but  
3       the point is well taken in terms of training and  
4       transition time.

5                   MS. SHAPIRO:   Thank you.

6                   PRESIDING MEMBER PERNELL:   So we  
7       appreciate that.

8                   MR. HOFFNER:   Thank you.

9                   MS. SHAPIRO:   Thank you, Tom.   So now,  
10      Tom and Bob, did you want to come up and speak  
11      with him, too?   Just -- we're going to let Tom  
12      speak, okay.   I missed hearing you speak, Mr.  
13      Fiock.

14                   MR. TRIMBERGER:   Good morning, I'm Tom  
15      Trimberger with California Building Officials.  
16      I'll be real brief.

17                   First of all, even being brief I want to  
18      commend the staff and contractors.   I'm looking  
19      forward personally to enforcing a better set of  
20      standards than we have now.   And I think it's been  
21      a long time coming.

22                   With that there are two issues I would  
23      like to address.   First is the timeframe which  
24      Doug just mentioned.   This definitely needs  
25      timeframe for implementation.   We've had people

1       here say you can't do it too fast, already here,  
2       sitting here.

3               I'm here to say yes you can do it too  
4       fast. And that will hurt the building officials'  
5       ability to enforce the standards. It will hurt  
6       the builders and the public, their ability to meet  
7       the standard.

8               And just to allow training, I know  
9       there's going to be a big push for training. I've  
10      got 150 people to sign up right now. So, do make  
11      sure that goes through there.

12              Also, the industry will need some  
13      training, not just the building officials, but  
14      people doing the compliance documentation. So I  
15      do look forward to a reasonable timeframe.

16              And please do consider publication  
17      timeframes. That's something that we've had a  
18      problem with in the past, which I think the last  
19      change to the standards was minor compared to this  
20      one, and we didn't have manuals at the time of  
21      doing training. It was a problem. And it hurt  
22      the credibility of the building official; it hurt  
23      the credibility of the Energy Commission in doing  
24      so.

25              Second, I want to address field

1 verification. I would suggest maybe, Bill, we  
2 might need to talk. This would be a complication  
3 for the building official to deal with. We're not  
4 allowed to final off the house, I'm understanding,  
5 without verification.

6 The scheduling and logistics of the old  
7 appendix F that were put into the '98 standards, I  
8 was involved in helping to create what I thought  
9 was a reasonable standard and workable. And in  
10 Sacramento County we do about 4500 new homes a  
11 year. And to my knowledge, we haven't done any.

12 I've talked to builders, and they say,  
13 no, we don't want to do it. It's too cumbersome,  
14 too difficult.

15 The logistics --

16 PRESIDING MEMBER PERNELL: I'm sorry,  
17 they don't want to do what?

18 MR. TRIMBERGER: They don't want to --

19 PRESIDING MEMBER PERNELL: Third party?

20 MR. TRIMBERGER: -- do field  
21 verification.

22 PRESIDING MEMBER PERNELL: Field  
23 verification.

24 MR. TRIMBERGER: I was looking forward  
25 to doing it, but to my knowledge, we haven't done

1       them yet. And I guess the statement was made  
2       earlier, if we build it they will come. I think  
3       we built it in '98, they didn't come.

4                   (Laughter.)

5                   MR. TRIMBERGER: Less than 1 percent of  
6       the homes built are being done with this. And  
7       those are the ones that are probably getting it  
8       with rebates from utilities and special programs  
9       like that.

10                  I do value tight ducts. I have talked  
11       up and down the state in training I do for CALBO  
12       about tight ducts. And as we heard earlier, it is  
13       working. The ducts are getting better.

14                  What the building officials have  
15       enforced for many years said that ducts must be  
16       substantially air tight. We found out with  
17       testing what we thought was substantially air  
18       tight wasn't. And we're getting better.

19                  But I'd suggest this is a large change  
20       to the standards, a large change for building  
21       officials. We've talked about a few things that  
22       I'd like to touch on. Nonmetallic frames were  
23       thrown out of the standards changes, even though  
24       they were cost effective because of availability.  
25       And I'm very very very concerned that we'll have



1 the same issue with field verification.

2 We've had some numbers thrown around,  
3 50, 100 HERS raters. I don't know how many HERS  
4 providers there are. We've got 100,000 new homes  
5 being built, sample. Let's not forget remodels,  
6 alterations. Let's not forget that we're looking  
7 at nonresidential duct tightness.

8 I'm saying that we may have four times  
9 as many as that original value. And it's only the  
10 new homes that can be sampled. Commercial  
11 projects can't be sampled, they're not repetitive.

12 And neither are alterations or remodels,  
13 which are very substantial, also.

14 We need to get tighter ducts. We're  
15 getting there. I'm very concerned about the  
16 burden being put on the builder and the building  
17 official for the administration of field  
18 verification.

19 MS. SHAPIRO: Thank you.

20 PRESIDING MEMBER PERNELL: Thank you.

21 MR. PENNINGTON: Could I comment on one  
22 piece of this?

23 MS. SHAPIRO: It better be real short,  
24 Bill.

25 MR. PENNINGTON: I'm always short. The

1 comment about build it, they will come. One of  
2 the problems with the current standards is that if  
3 anything we've relaxed them a little bit. And  
4 there are ample opportunities for complying  
5 through other means.

6 And so, it wasn't really any pressing  
7 function or any forcing function to try to get  
8 diagnostics going. And that is a big problem.  
9 Without that kind of a forcing function it's not  
10 likely that we're going to see some progress here.

11 MR. TRIMBERGER: I concur that if you  
12 force them they will come.

13 (Laughter.)

14 SPEAKER: Hello, Johnny Carson.

15 (Laughter.)

16 MS. SHAPIRO: Thank you, Mr. Pond.  
17 Robert Pond.

18 MR. POND: I'm Robert Pond, Energy  
19 Conservation Technologies.

20 I was going to talk as briefly as I can,  
21 some points came up that I thought I'd better  
22 address quickly.

23 I'm the advocate, as Dr. Rosenfeld  
24 knows, for radiant barriers. And have been the  
25 fellow that championed that effort in the state

1       for the last 13 years or so. And I want to thank  
2       you for addressing radiant barrier and making it a  
3       part of this program. It's very exciting for me.

4               But I've got a broad history. I'm going  
5       to stick to a question that came up by Owens  
6       Corning first. The R-30 standard that's alluded  
7       to falls back to, I think, a problem that we've  
8       had in terms of the way we look at building  
9       envelopes, not only nationally but in the state,  
10      in terms of making the ceiling the envelope  
11      instead of the roof, which is how I got into the  
12      business I'm in.

13             So I just want to recommend that there's  
14      probably a number of climate zones in the state  
15      that are cooling oriented where a radiant barrier  
16      or a cool roof and an R-19, for example, would  
17      create a substantially better envelope for that  
18      home than just continually raising mass levels of  
19      insulation.

20             On the vaulted ceiling issue, the  
21      Uniform Building Code calls for, even in cathedral  
22      ceilings, for venting to be in place, and so  
23      that's a critical thing in terms of the radiant  
24      barrier satisfies again that the envelope  
25      requirement that you're looking for, there's a

1       venting occurring or should be occurring in that  
2       cathedral space, and ducting is ducting regardless  
3       of where it is.

4               And so a radiant barrier or cool roof  
5       again is going to have the same positive impact on  
6       that whole envelope of that home, regardless of  
7       whether there's a cathedral ceiling there or not  
8       in our view.

9               The issue of raising the R value of  
10       ducting falls back to if you're cooling an attic  
11       by having a radiant barrier or cool roof above  
12       that ducting, then raising the R value of the  
13       ducting, while it would be a benefit, creates  
14       construction problems because you have a larger  
15       mass that they're trying to get through scissor  
16       trusses and so on, so it just doesn't seem  
17       practical. And I just wanted to cover that.

18              Back to the cool roof issue quickly. In  
19       the current plan there's a reference to the cool  
20       roof not receiving a credit of radiant barrier's  
21       credit, if radiant barrier is present. And I'd  
22       like to recommend that if staff can figure out a  
23       way to apply a number to it, that if a builder  
24       includes both radiant barrier and a cool roof,  
25       maybe a bonus credit can be made available in some

1 way, maybe just in terms of variances and  
2 temperatures from the studies I've read on cool  
3 roofs and radiant barriers combined, maybe a 10  
4 percent bump in credit would occur on that part of  
5 the equation if the builder included both.

6 Lastly, and I'll probably make enemies  
7 here, I've got plenty so it won't -- what's  
8 another one?

9 But the real bottomline to this, as I  
10 see it, is this: That let's assume that it's  
11 going to cost \$1000 to raise, in the end it's  
12 going to cost the homeowner another \$1000 for  
13 these energy efficiency measures.

14 All of the things I learned in the last  
15 15 years of my business is we tried to finance  
16 these things, that that was what was required, is  
17 that, and this is a rough number, but for \$1000  
18 added to the cost of a mortgage.

19 So if our home builders would assume  
20 that's going to be a \$250,000 house, they're going  
21 to build it for that. So now it's going to  
22 \$251,000 because we're going to add all these  
23 energy efficiency measures.

24 It costs about 10 bucks a month over the  
25 period of a mortgage to pay for that \$1000. And

1       that's -- I think these things have to be reduced  
2       to, we've got an energy crisis, there's no doubt  
3       about it. We aren't going to have enough energy  
4       next year, and somehow we've got to reconcile  
5       industry and residential energy use, and it's got  
6       to happen.

7               So, maybe what it takes in the end is an  
8       announcement to the citizens of the state that  
9       it's going to cost you about another 10 bucks a  
10      month the next time you buy, or when you buy your  
11      new home, because we have to get these energy  
12      efficiency measures in place to reduce energy  
13      usage in the state.

14             MS. SHAPIRO: Thank you.

15             PRESIDING MEMBER PERNELL: Thank you.

16             MS. SHAPIRO: Rick Wiesner from SMUD.

17             MR. WIESNER: Good afternoon, Rick  
18      Wiesner with SMUD. Two comments, I'll get right  
19      to it.

20             First one is on your table 4 of energy  
21      and demand savings statewide. Although it's  
22      accurate, I think it needs to maybe have a  
23      footnote that accounts for utility programs that  
24      have been affecting on the code. This table  
25      assumes a baseline of minimum compliance to

1       minimum compliance. And I believe, at least from  
2       my program, that's not the case.

3               To give you some context there, this  
4       year we'll do about 3000 SMUD Advantage Homes,  
5       which are 50 percent better in cooling, which will  
6       account, just in Sacramento County, for about 2.5  
7       megawatts.

8               So a footnote there might caution  
9       someone for using that number such as the 155 peak  
10       megawatts for a forecast of change due to the  
11       code.

12              I know the other utilities have similar  
13       programs concentrated in some of these other zones  
14       that may also derate that. So, just a comment  
15       there.

16              My second area today is on the field  
17       verification and tight ducts. Again, some  
18       context. At SMUD we adopted the tight duct  
19       protocol as an upgrade measure for the SMUD  
20       Advantage Home.

21              So in the last three years we've  
22       probably had about 5000 tight ducts installed in  
23       Sacramento County. And then we've provided  
24       incentives for that.

25              My suggestion would be to maybe approach

1       that there is a compliance path that allows for  
2       self certification by the builder that does not  
3       have to involve a third party. From my experience  
4       of working with our builders, none of them have  
5       adopted the third party compliance path, and from  
6       my observation it's primarily not only a cost  
7       issue, but a control of schedule and costs.

8               If you get down to the subdivision  
9       superintendent level, they aren't ready to deal  
10      with this.

11             So my suggestion would be a compliance  
12      path that allows self certification. This could  
13      include putting the certifications in the public  
14      domain so they can be, if you will, observed and  
15      verified by many of the interests in this room.

16             The protocol would still be a HERS  
17      compliance, so it would still be at the HERS  
18      level. We could require the builder, as an  
19      example, to offer the third party independent test  
20      as an option for the homebuilder.

21             There are many other components to that  
22      that could be discussed, but my interest would be  
23      in seeing that the tight duct and the thermostatic  
24      expansion valve is implemented. I think they're  
25      good measures. We've seen them work in



1 Sacramento.

2 And so my interest is trying to overcome  
3 this barrier and giving one more choice to  
4 builders for using these measures.

5 In general, we support the rest of the  
6 work the staff has done on the measures. From my  
7 personal perspective it either means my job is  
8 done, since they've implemented everything we've  
9 tried to do, or now I have three or four times  
10 harder to get beyond the code, again.

11 That's all I have.

12 PRESIDING MEMBER PERNELL: One question.  
13 If SMUD has implemented the tight duct program and  
14 it's a self certification, and that seems to be  
15 working for you?

16 MR. WIESNER: It does. To put a little  
17 context into it, we either observe the inspection,  
18 itself, or through our EnergyStar home program  
19 we've had a third party provider come behind and  
20 inspect the ducts a second time.

21 PRESIDING MEMBER PERNELL: So you do  
22 have a third party --

23 MR. WIESNER: On some of them, yes.  
24 Approximately --

25 PRESIDING MEMBER PERNELL: --

1 certification program --

2 MR. WIESNER: -- 700 this year. Yes.

3 PRESIDING MEMBER PERNELL: -- to go  
4 behind the self certification of the contractor?

5 MR. WIESNER: That's correct.

6 PRESIDING MEMBER PERNELL: Okay.

7 MR. PENNINGTON: Could I ask a quick  
8 question.

9 MS. SHAPIRO: Yes.

10 MR. PENNINGTON: Do you know what  
11 percentage of your homes that you do the  
12 observation in?

13 MR. WIESNER: It's a small percentage,  
14 probably less than 10 percent. Although I will  
15 say we are -- one of my problems is I haven't had  
16 the equipment to -- and the staff to actually do,  
17 if you will go behind and do -- having SMUD as a  
18 third party, but I will have after January.

19 So I'm adding a third way of inspecting;  
20 that would be for us to spot check, as a third  
21 party would, for our program.

22 MR. PENNINGTON: So currently you're  
23 doing less than 10 percent of these are  
24 observations, and --

25 MR. WIESNER: Right.

1                   MR. PENNINGTON:  -- essentially zero  
2                   percent verification?

3                   MR. WIESNER:  With SMUD Staff.

4                   MR. PENNINGTON:  Yeah, okay.

5                   MR. WIESNER:  About 10 percent with the  
6                   Energy Star program.  And I do get the results of  
7                   the tests for every single home, though.

8                   MR. PENNINGTON:  Okay, thanks.

9                   PRESIDING MEMBER PERNELL:  Okay, thank  
10                  you.  We're going to take a lunch break of a half  
11                  an hour.  Please be back at 1:30.

12                  (Whereupon, at 1:00 p.m., the hearing  
13                  was adjourned, to reconvene at 1:30  
14                  p.m., this same day.)

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1 AFTERNOON SESSION

2 1:40 p.m.

3 HEARING OFFICER BOUILLON: The Energy  
4 Commission hearing on the draft AB-970 building  
5 energy efficiency standards will resume.

6 And we have a speaker, would you please  
7 identify yourself for the record.

8 MR. WYLIE: Yes, my name is Rick Wylie;  
9 I'm President of Beutler Heating and Air  
10 Conditioning. We're large residential, primarily;  
11 but also commercial heating and air installation  
12 company. So I have worn my bulletproof vest. I'm  
13 ready.

14 We've been in business since 1947.  
15 We're currently running at a pace of about 20,000  
16 homes and apartments a year. So we've got a  
17 little bit of experience.

18 I would like to say that we endorse the  
19 CBIA position that some time allowance would be  
20 preferable on some of these measures. But even  
21 under our current standards a lot of the comments  
22 I'm going to make are going to relate to those, as  
23 well, whether you incorporate -- tight duct  
24 measures is my first topic, whether that's  
25 incorporated as a prescriptive measure this year

1 or not.

2 Just a little bit of history. We've  
3 supported duct leakage improvements over the last  
4 ten years. We built a duct blaster before they  
5 were available in the marketplace.

6 We worked with PG&E and SMUD to help  
7 develop their tight duct programs. And at that  
8 time, as far back as 1992 we went on the record as  
9 supporting mandatory leakage certification. As we  
10 still support it.

11 That's not being offered or recommended  
12 this year, but anytime you're looking for an  
13 advocate for that, we are there.

14 We have installed thousands of tight  
15 duct systems under PG&E and SMUD protocol, which  
16 matches the current ACM credits, at least the  
17 latter round of that, PG&E was doing it even  
18 before those ACM measures.

19 Out of those thousands of installations  
20 our rejection percentage has been virtually  
21 nonexistent. This was attested to by the SMUD  
22 representative, Mike, this meeting as well as the  
23 prior meeting. We've proven we can do the job.

24 In 1997 when CEC was deciding their  
25 standards for 1998 an extreme amount of time and

1 effort was put into the current ACM credit. And  
2 it accomplished little. That's already been  
3 attested to today.

4 We were against that protocol at that  
5 time because we felt it would not be viable, and  
6 it was proven to be un-viable. Here we are today,  
7 and with the current proposal there's just more of  
8 the same. It's a recommendation that it be a  
9 prescriptive measure which maybe heightens a  
10 little bit of awareness, but it does not require  
11 it.

12 It still allows for tradeoffs. And it  
13 still retains the current difficult third party  
14 inspection protocol. We feel that third party  
15 protocol is virtually impossible to implement.  
16 There's been a number of comments today about,  
17 well, it's only one out of seven. Anybody who has  
18 ever looked at that appendix F will realize one  
19 out of seven will never happen. One out of seven  
20 of each specific plan type that is completed and  
21 yet not permitted, that number is at best one out  
22 of two. You will be inspecting under that rating  
23 in order to meet the requirements of that appendix  
24 F.

25 So it's just un-viable and very

1       expensive. And nobody needs the added cost and  
2       the added complication of coordinating with  
3       another inspection element.

4               Also, just to dispute, in some of the  
5       CEC documentation they're saying as low as \$27 for  
6       that third party inspection cost. If they'll just  
7       hook me up with who will do that --

8               (Laughter.)

9               MR. WYLIE: -- we'll hire them to do  
10       this program. Because that's just not out there.

11               A number of the documents, I don't  
12       understand that in many of the cost analyses  
13       there's a reasonable allowance for HVAC portion at  
14       \$250. We estimate that at \$200 is what we allow  
15       for that. So certainly in line.

16               TXV cost, they've got \$150. Quite  
17       honestly we value that at about \$45, so that ought  
18       to make everybody a little happier.

19               But there's no third party rating  
20       expenses in any of that cost analysis unless it's,  
21       you know, miraculously buried somewhere. So, if  
22       we allow -- Centex was here today and mentioned  
23       \$150. That's exactly the number that we feel is  
24       more appropriate for the current protocol.

25               So we've got a package that's somewhere

1       around \$400 for the tight duct and TXV and third  
2       party rating.

3               Now, the new twist that came in in the  
4       proposal is the alternate D package, and it just  
5       does exactly what happened in 1998. It totally  
6       pulls away any benefit of a builder going towards  
7       the tight duct credit.

8               Because in zone 12 where a large number  
9       of our work is, it only requires an 11 SEER air  
10      conditioner and vinyl frame windows is an offset  
11      for the tight duct and the TXV and the third party  
12      rating.

13              Well, number one, vinyl windows, and  
14      again it will maybe be more favorable for some of  
15      your cost analyses, but vinyl windows are now as  
16      cheap as aluminum. Many of my builders are  
17      switching to vinyl because it is as cheap or  
18      cheaper. So the vinyl is a freebie. That's not  
19      going to cost the builder anything.

20              And then as far as the SEER, an 11 SEER  
21      air conditioner is about 175 bucks. Well, if you  
22      give somebody, a builder an option between the  
23      \$400 to \$450 for tight duct implementation, or  
24      \$175 for 11 SEER, I think the option is easy. He  
25      avoids the heartache and he spends a lot less



1 money.

2 One point, and I will again put on my  
3 armor here, that one of the graphs that Mr. Hammon  
4 from ConSol put up on the chart, he was very kind  
5 and I will reward his kindness with honesty. One  
6 of those graphs was probably our company where he  
7 showed the number of passes versus number of  
8 fails.

9 What I will dispute with Mr. Hammon is  
10 that we could put up that same graph and say this  
11 is the failure of the raters. And all of those  
12 that were shown as a failure on his part we would  
13 attest is a failure of the rater process.

14 I was personally involved in one of the  
15 BII field inspections that they came in after us  
16 and put in a presentation for one of our builders,  
17 these are homes. It happened to be a SMUD  
18 Advantage home where we do the tight duct measure  
19 as currently outlined in the ACM.

20 And they did a duct blast after we did,  
21 and they showed a failure. Fortunately I was  
22 there and I was able to show them the problems in  
23 their test. And when they went and covered the  
24 register that was left open, the home magically  
25 passed.

1                   So, the problem is, and I want to be  
2                   fair to them, the problem is they have no goal of  
3                   finding success. As a third party rater their  
4                   goal is to run in, measure the leakage, and write  
5                   it down. And if it passes, okay. If it fails,  
6                   that's okay, too, and maybe even a little bit  
7                   better because it's easier to justify your  
8                   presence.

9                   However, when our men go in we have to  
10                  find success. We have to keep testing and  
11                  tightening whatever it takes until we pass. And,  
12                  of course, the first thing we test and make sure  
13                  is tight is did we seal the registers off at the  
14                  ceiling. Well, that's being tested as actually  
15                  the ability to test the home.

16                 And did we miss a register. Any leakage  
17                 at the testing instruments themselves will show a  
18                 home failing even when it doesn't. So we've got  
19                 to do that first, and obviously that's the first  
20                 place we look that a rater never looks.

21                 Whereas then if we find that we have  
22                 done a good job there, then we are able to  
23                 identify where maybe a plumbing pipe has  
24                 penetrated our coil case and it was not sealed  
25                 after we had been there. Or other errors in our

1        installation that we're able to capture at that  
2        point of testing.

3                But the third party rating process does  
4        not allow for that. Does not encourage that level  
5        of accuracy.

6                We're here today requesting that you  
7        consider doing things that will allow this option  
8        to be more heavily used. If we do it the way  
9        you're recommending it I do not believe it will be  
10       used much more significantly than it is right now.

11               If you will allow some alternatives to  
12       the third party rating, then I believe we can  
13       implement more. By our numbers we're doing about  
14       10 percent of the houses in California. We can  
15       affect 10 percent with a very simple solution.

16               Number one, in your standards you  
17       require that the HERS rater be financially  
18       independent from the installation arm. We're  
19       asking you to consider removing that requirement.  
20       Allow us to be a HERS rater, us and any other  
21       contracting or even builder firm that is willing  
22       to go through the training, and willing to pay the  
23       fees for monitoring that CHEERS and other HERS  
24       providers would provide.

25               Hold us to the same criteria that the

1       third party raters are held to. They are also  
2       human beings, and they have conflict of interest;  
3       they have time schedules they're trying to meet.  
4       They've got to do these 120,000 houses next year  
5       with 56 people. They're going to be a little  
6       hairy.

7               So they need oversight, as well. And  
8       CHEERS provides that. They would provide that  
9       with us, as well.

10              We've also had numerous discussions with  
11       CALBO and the officials there have expressed  
12       confidence in being able to monitor our  
13       certifications. We've offered, and they've  
14       accepted, the fact that we could set up the  
15       testing equipment and provide the technician to  
16       test any home, whatever random level they felt was  
17       necessary to validate that when they saw one of  
18       our certificates on the wall they would feel that  
19       it was valid.

20              With these allowances we believe we can  
21       bring the costs into line to where we can put it  
22       in; the builders can afford this as a viable  
23       option. And we'll see some significant numbers.

24              A couple of other issues. The SEER, I  
25       would like to address the source SEER factors. I

1       see a parallel in that between what we're doing  
2       with tight duct and this area. It's again a new  
3       standard.

4               Your are automatically within the  
5       program degrading the SEER value of a unit based  
6       on what you see as historical EER and actual, what  
7       you're defining as source SEER. You're not  
8       allowing the manufacturing element to address that  
9       issue.

10              And I would recommend that you consider  
11       an EER rating, or something equivalent that will  
12       give you what you need, and that is efficiency at  
13       peak temperatures, but will allow the  
14       manufacturers to address it.

15              Right now they're dealing with a  
16       national mandate. And the national protocol is  
17       SEER. And, you know, they're not being judged by  
18       it, just as we hadn't been judged by tight duct  
19       measures in years past.

20              So give them a chance to know what the  
21       protocol is and give them an opportunity. I think  
22       you'll find overnight that there will be equipment  
23       available that have higher EERs and will meet the  
24       goal that you're seeking, if you will allow the  
25       program to address that and receive input for

1 actual EER of the equipment.

2 Just a brief note on the cost analysis.  
3 \$400 per ton on the estimated savings of CEC is  
4 overstated. We don't charge anybody \$400 a ton on  
5 any system we install. It would close to \$150 to  
6 \$250, maybe a \$200 median there for your numbers.

7 And then as someone else recognized, the  
8 tonnage reduction is extreme. We do reduce the  
9 tonnage of our equipment when we're using low E  
10 squared glass. We recognize the benefit of that,  
11 and we, in fact, promote that benefit. But it's  
12 closer to a half a ton is a more common downsizing  
13 element.

14 And most of the other measures that  
15 you're looking for credit for as in tight duct and  
16 radiant barrier, really the sizing engineering  
17 world is not up to date in order to provide an  
18 appropriate credit level that is going to be  
19 defensible when a homeowner says I don't think my  
20 air conditioner is big enough.

21 So, with that, I think that was all of  
22 my points, and I'm open for any questions or  
23 bullets.

24 PRESIDING MEMBER PERNELL: I have a  
25 couple of questions, and then let staff respond to

1       some of the things you've said, if they choose to.

2               One of the things that intrigued me is  
3       the fact that your company is already doing tight  
4       ducts and you're certifying that yourself, so it's  
5       a self certification type of program.

6               And you're working with the utilities  
7       and so there's some credit involved. So, it  
8       appears that there's a lot of experience in doing  
9       this from either you or your company or your  
10      employees. And that's to be commended.

11              So, let me understand kind of the gist  
12      of your comments, and that is that tight ducts  
13      should be mandatory, otherwise it won't get done,  
14      even though I guess there's a separation if you go  
15      from the one package to the other, to the  
16      alternative, there's like a \$300-and-some  
17      difference, according to one of the slides I've  
18      seen. And I'm not sure that I'm understanding  
19      that correctly.

20              So there's an incentive to do tight  
21      ducts, but your comments are that the incentive is  
22      not large enough.

23              MR. WYLIE: My numbers show there is no  
24      incentive. In fact, the incentive is in reverse.  
25      It's going to be cheaper to not do tight ducts.

1                   PRESIDING MEMBER PERNELL: Let me ask  
2                   staff, is that the way the packages are set? That  
3                   it is more beneficial to the contractor in terms  
4                   of first costs not to do -- to tight duct third  
5                   party.

6                   MR. WILCOX: Well, one of the issues  
7                   there is the low conductance window frames, which  
8                   for reasons of industry supply, we decided not to  
9                   put into packages. And those, I think that's one  
10                  of the issues that he's talking about that he said  
11                  that those are essentially free.

12                  And if that's the case, then you get  
13                  quite a ways in the alternative package the price  
14                  comes down quite a bit, compared to what we  
15                  estimated it at.

16                  I'm not sure that everyone would agree  
17                  that vinyl or low conductance frames are free.  
18                  But that's --

19                  PRESIDING MEMBER PERNELL: Well, I'm  
20                  sure we're going to hear from some window  
21                  manufacturers. They might disagree with that.

22                  MR. WILCOX: Yeah, right. And so I  
23                  think that to some extent it depends on what you  
24                  assume that the costs are going to be for the duct  
25                  tightness program. Because our estimates are that



1       that's the most cost effective thing to do, and  
2       that's why we put it in the prescriptive package.

3               So, I mean the reason we have  
4       performance standards is it's not -- all the  
5       builders don't see things the same way.

6               MS. SHAPIRO: Closer to the mike.

7               MR. WILCOX: In my mouth.

8               MS. SHAPIRO: You really really have to  
9       be close, Bruce.

10              (Laughter.)

11              MR. PENNINGTON: I think this goes to  
12       the point that we were trying to make it --

13              MS. SHAPIRO: Close to the mike, Bill.

14              MR. PENNINGTON: -- that there are many  
15       options available to the builder to comply with  
16       the standards, and that's what we've shown. And  
17       that, in fact, this doesn't require a hundred  
18       percent of the houses to go to a field  
19       verification system. It creates more incentive  
20       for that to happen than under the current scenario  
21       by a considerable amount.

22              But there certainly are other options  
23       and if the builder is already predisposed to going  
24       to vinyl windows, then you know, that gets him a  
25       good part of the way there for doing it.

1                   PRESIDING MEMBER PERNELL:   Okay, you  
2           have a --

3                   MR. NITTLER:   Yeah, the study that I  
4           presented earlier today found round figures  
5           between, for builders that would prefer not to use  
6           field verification features, that their cost, the  
7           statewide average weighted cost went up between  
8           \$130 and \$140 per home if they choose to not use  
9           things like tested ducts.

10                   So, on the average it would get more  
11           expensive for the builder to choose features,  
12           other features.

13                   MR. WYLIE:   Take a look, though, Ken, I  
14           mean you're looking at a weighted average across  
15           the state, and obviously you have to try to do  
16           that in this type of analysis, but people in zone  
17           12 aren't going to use tight ducts because it's  
18           cheaper for people in zone 2 to do so.

19                   And in zone 12 even your numbers show  
20           it's cheaper to not do tight ducts. And in fact,  
21           your numbers show number one for zone 12, it  
22           requires a 12 SEER air conditioner, where the  
23           requirements only call for 11.

24                   And, again, the other issue is the vinyl  
25           windows, and it's a question whether they're free

1 or they are as expensive as you have them  
2 projected.

3 I'm saying that they are a close to free  
4 as you can get, because I've got some very cost  
5 effective and cost sensitive builders who are  
6 switching to vinyl, and it's not for title 24  
7 reasons. So I don't think they're doing it  
8 because it's more expensive.

9 MR. NITTLER: Well, it's pretty hard to  
10 argue when you're doing a life cycle cost analysis  
11 or a cost analysis that if a product that has  
12 twice the performance is free, it's pretty darn  
13 hard to fight that economic. I -- that goes  
14 without saying.

15 PRESIDING MEMBER PERNELL: All right, I  
16 don't want to get into a debate on the cost, but  
17 what I would suggest is that Beutler sit down with  
18 staff and let's try and work out what the numbers  
19 are. And if we can't, then we can't.

20 But one of the things that's going to be  
21 intriguing to me is that we have a tight duct  
22 system because not only does it help the  
23 homeowner, it saves energy. And in case someone  
24 don't know where they're at, this is the Energy  
25 Commission. And this is part --

1 (Laughter.)

2 PRESIDING MEMBER PERNELL: -- of our  
3 charge. So, you know, again, Rick, I appreciate  
4 you being here, and explaining to us how your  
5 company works, and the various utilities that  
6 you've worked with, especially SMUD which I know a  
7 little bit about.

8 But what we're trying to do is do it  
9 right. And do it where we can save energy and do  
10 it for the homeowner and not put an extraordinary  
11 burden on the contractor.

12 And having said that, again we have a  
13 mandate to do something by 970. So, we're kind of  
14 trying to balance this, and I have to say that I  
15 think staff and their consultants have done a good  
16 job in doing that.

17 But we're not going to always come out  
18 because we're a different group of folks, we're  
19 not going to always come out with the same  
20 numbers.

21 And one of the things that I've  
22 advocated the same with CBIA, is that we get  
23 together and go over those things, and try and  
24 come up with something that works for both of us.  
25 And that, you know, kind of gets my neck off the

1 chopping block in terms of saving energy.

2 MR. PENNINGTON: I think one thing  
3 that's been said here is that our numbers are  
4 maybe on the high side is what people are saying.  
5 And so our conclusions about cost effectiveness  
6 are even more clearly demonstrated.

7 You know, we didn't want to be on the  
8 low side of the range. That was not our  
9 objective, to be always pressing on the low side  
10 of the range on cost because we wanted to have a  
11 legitimate cost effectiveness analysis that was  
12 clear.

13 MS. SHAPIRO: Thank you, Bill. Mr.  
14 Proctor is dying to say something.

15 MR. PROCTOR: Yes, Rick, may I ask you a  
16 question?

17 MR. WYLIE: Sure.

18 MR. PROCTOR: On the programs where your  
19 people are actually testing the ducts when they're  
20 done, correct?

21 MR. WYLIE: Yes.

22 MR. PROCTOR: And then there's two  
23 utility programs, PG&E and SMUD. Now on either of  
24 those programs do they have an inspection  
25 mechanism beyond what you do when your guys test

1       it?

2                   MR. WYLIE:  It's been a bit of a moving  
3       target.  PG&E used to have a very active post  
4       inspection of, you know, a certain percentage.  
5       However, I have not seen much symptoms of that in  
6       the last year.

7                   With SMUD they have never had their own  
8       testing teams, so what they've done is  
9       periodically go out with us and see what we're  
10      doing.  And, you know, confirm in their minds that  
11      what we're doing is relevant.

12                  Obviously it's not exactly the same  
13      thing as a third party inspection where they  
14      follow us and, you know, check our number on a  
15      home that we didn't know they were going to look  
16      at us at.

17                  So that's the reality of what we're  
18      seeing right now.

19                  MR. PROCTOR:  Thank you.

20                  PRESIDING MEMBER PERNELL:  Okay, just  
21      one final question that I think is worth looking  
22      at, that Rick brought up.  And that is with the  
23      experience that the company has, whether or not  
24      they are automatically excluded or whether we can  
25      put some safeguards in to eliminate conflict of

1 interest so that they can perhaps be a third party  
2 inspector.

3 So I don't know that we can do that --

4 MR. PENNINGTON: They certainly have the  
5 option of being a third party inspector for some  
6 other mechanical contracting firm.

7 (Laughter.)

8 (Parties speaking simultaneously.)

9 PRESIDING MEMBER PERNELL: Well, wait a  
10 minute, there's some movement here.

11 (Laughter.)

12 MR. PENNINGTON: We have regulations  
13 that were adopted by the Commission that establish  
14 conflict of interest restrictions on raters and  
15 providers and -- the building code, you know, in  
16 terms of the special inspector provisions of the  
17 building code, doesn't allow a special inspector  
18 to inspect their own work.

19 PRESIDING MEMBER PERNELL: Right, but  
20 there's nothing eliminating them from being a  
21 third party inspector to the rest of the industry?

22 MR. PENNINGTON: Correct.

23 MS. SHAPIRO: But that's not what  
24 they're asking for.

25 MR. WYLIE: Obviously our benefit is we

1       have to do a duct blast at every home to validate  
2       that it's going to pass any level of inspection  
3       that somebody comes after us with, and to make  
4       sure it's doing what it's supposed to do.

5               It's the most efficient for us to do  
6       that process all in one stop. And, you know,  
7       we're trying to streamline it and make it cost  
8       effective.

9               And to bring in a true third party that  
10      has no interrelationship with the installation  
11      process and our own inspection process just drives  
12      up the cost and drives up the complication.

13              One other point I omitted to discuss on  
14      the current program, even the testing, I would at  
15      least ask for some consideration on that one in  
16      seven standard. Make that a little more  
17      reasonable.

18              EnergyStar has had a one in seven  
19      protocol, but it's one out of every seven houses  
20      down a row. It's not one out of every seven of  
21      plan one. And that makes a huge difference.

22              And I don't see the value of, you know,  
23      we're checking quality and we're checking process.  
24      It doesn't matter whether it's plan one or plan  
25      two, if we're going to screw up on our process



1       it's going to show up on either one of those  
2       plans.

3               If you'd simply look at changing the  
4       protocol in appendix F to make it one out of seven  
5       houses, it would greatly improve the efficiency of  
6       the program.

7               HEARING OFFICER BOUILLON:   Okay, thank  
8       you, Rick.

9               MS. SHAPIRO:   Michael Day, do you have  
10       something to say that is different?

11              MR. DAY:   Further extending a few of the  
12       comments.

13              MS. SHAPIRO:   Can you be very brief.

14              MR. DAY:   Yes, I can.

15              MS. SHAPIRO:   Thank you.

16              MR. DAY:   I am Michael Day; I'm also  
17       with Beutler Heating and Air, and there were a  
18       couple of items that I'd like to expand on from  
19       what Mr. Wylie was going through.

20              First off, there's a little bit of  
21       misconception. There's some thought that if there  
22       was some form of HERS rating by the contractor,  
23       themselves, that we were somehow avoiding field  
24       verification. That's simply not the case.

25              As a matter of fact, we believe that

1 field verification should be actually somewhat  
2 more rigorous standard than is currently being  
3 applied.

4 For example, we believe that field  
5 verification should be 100 percent as opposed to  
6 one in seven, we're actually advocating 100  
7 percent of the new construction homes in  
8 California for people that are doing their own  
9 field verification should get this.

10 Now, that would seem to be counter-  
11 intuitive, but the fact is that during the  
12 construction process, as Mr. Wylie started to say,  
13 we have to do the test.

14 And, Commissioner Pernell, you asked why  
15 is it more expensive for us to do a good job.  
16 Under current standards, a duct system that  
17 currently passes, you don't have to pressurize it.  
18 In order to meet tight duct construction  
19 standards, we have to bring in the equipment, we  
20 have to pressurize it because that's really the  
21 only way that you're going to find the small leaks  
22 that cumulatively get us to the 6 percent leakage  
23 standard which is what is the tight duct  
24 construction.

25 The fact, though, is that crew that

1 comes out there to check things out and that duct  
2 blaster that they use as part of our construction  
3 process is the same piece of equipment and the  
4 same crew that could also verify it if they've  
5 been through HERS rating.

6 Now, every HERS rater, be they for one  
7 of the third party -- a member of the third party  
8 testing industry or whether they work for a  
9 mechanical contractor, has to have regular  
10 supervision.

11 That supervision is provided by CHEERS,  
12 the organization that trains them and also  
13 supervises them. So it's not exactly as if we'd  
14 be going running off through the fields just  
15 checking things off with nobody looking over our  
16 shoulders.

17 The fact is that CHEERS already has in  
18 its protocol and under its current guidelines a  
19 system by which people come out and check a HERS  
20 rater check, be that from Beutler, be that from  
21 ConSol, be that from any person that's doing a  
22 HERS rating check.

23 So you're going to have people that know  
24 that industry coming out and verifying your  
25 certificate.

1                   Additionally, SMUD has gone on to say  
2                   that with a pretty fair body of evidence, that  
3                   thousands of units can be done to the leakage  
4                   standards that are mandated under tight ducts.

5                   And the bottom line is this, is that  
6                   under the 1998 standards there was an option to go  
7                   with tight ducts, or an option to get around it.  
8                   And better than 99 percent of the houses that were  
9                   built in California got around not field  
10                  verification, but the third party field  
11                  verification.

12                  If we're trying to really save energy,  
13                  which is what AB-970 told us to do, we want tight  
14                  ducts. We, as an industry, would like tight  
15                  ducts. CBIA would like tight ducts. NRDC would  
16                  like tight ducts. There's no argument about that.  
17                  There's no disagreement about what the protocol  
18                  should be to build them. There's no difference  
19                  over the protocol of how they should be tested or  
20                  how that should be documented.

21                  The only question is whether or not a  
22                  regulation, which the Commission had enacted,  
23                  which is the financial interest clause, in what  
24                  set up CHEERS, can be relaxed to allow us to avoid  
25                  the duplication of effort inherent in having a

1       third party come in.

2                   We think that it's anti-ethical to our  
3       system to say that everybody in the mechanical  
4       contracting industry is incompetent. That  
5       everybody in it cheats, and that no one can be  
6       tested --

7                   PRESIDING MEMBER PERNELL: Mr. Day, Mr.  
8       Day, let me stop you for a minute.

9                   MR. DAY: Okay.

10                  PRESIDING MEMBER PERNELL: First of all,  
11       you know, the purpose of this hearing is not to  
12       relax any regulations that is existing on the  
13       books, so let me just say that.

14                  And secondly, I think that Rick has done  
15       a good job in representing your company on some  
16       issues that we're going to take back and think  
17       about.

18                  Now, we're not saying that, you know,  
19       every contractor cheats, or any of that. Nor are  
20       we saying everyone is as good as Beutler.

21                  So we have to take it in context. So,  
22       you know, I don't want to -- I mean if you got  
23       something --

24                  MR. DAY: All I would say, sir, is set a  
25       high bar. Set people watching over you. Set

1       punishments for people that can't live up to that  
2       standard. And let us have the opportunity to  
3       perform. Thank you.

4               PRESIDING MEMBER PERNELL: I am also  
5       interested in tight ducts, so I don't want to do  
6       anything to allow contractors to go somewhere  
7       else, or incentivize them going somewhere else.

8               Commissioner Rosenfeld.

9               COMMISSIONER ROSENFELD: This is really  
10      a question to Bill Pennington.

11              I come into this inspection business  
12      kind of late, but I had some experience in  
13      Washington with the inspections by OSHA of health  
14      and safety and by EPA with violators of emissions.

15              And the modern tendency has been  
16      basically to keep track of the records -- let's  
17      take OSHA. If a company has no injuries for ten  
18      years in a row, they're probably pretty  
19      conscientious. So you don't check on them quite  
20      as much as a company that has bad backs pouring  
21      out every day.

22              OSHA, at least, doesn't go by rules like  
23      one in seven, they go by we're going to check on  
24      companies with bad records, and we're going to  
25      emphasize that as opposed to good records.

1                   Is there a possibility that we can do  
2           checking on independent checking at the one in  
3           seven level and then gradually change that ratio,  
4           depending on the record of the contractor,  
5           himself?

6                   MR. PENNINGTON: That has not been  
7           proposed up to this point by anyone.

8                   COMMISSIONER ROSENFELD: Maybe we could  
9           discuss this offline.

10                  MS. SHAPIRO: Thank you, --

11                  MR. PENNINGTON: That's a possibility.  
12           The City of Irvine does something similar to that.

13                  COMMISSIONER ROSENFELD: Okay, thanks.

14                  PRESIDING MEMBER PERNELL: Good point.

15                  MS. SHAPIRO: Okay, --

16                  MR. DAY: Thank you.

17                  MS. SHAPIRO: -- could we have -- thank  
18           you, Mr. Day. Could we have Tom Hamilton, please.

19                  MR. HAMILTON: Good afternoon. I'll  
20           make my remarks brief. Everybody else has been  
21           talking about us all day, so I guess it's now my  
22           turn.

23                  My name's Tom Hamilton; I'm the  
24           Executive Director of California Home Energy  
25           Efficiency Rating System, commonly known as

1 CHEERS. CHEERS was approved by the Energy  
2 Commission in August of '99 for the purpose of  
3 providing verification under the ACM in title 24.

4 What I'd like to do is just provide some  
5 factual data here today to make it clear on what  
6 has been said since nobody's really talked to me  
7 about things.

8 Fact number one: CHEERS has over 80  
9 independent certified raters throughout the state  
10 that have been trained and certified according to  
11 the ACM guidelines under title 24.

12 These 80 individuals have chosen to be  
13 certified by CHEERS under the voluntary ACM  
14 guidelines because they found it to be a valuable  
15 source of business for them.

16 There's been a lot of talk, there hasn't  
17 been a lot of compliance work done under the ACM.  
18 I think that it's changed because people are  
19 finding that it is viable means of making a home  
20 compliant. We have several builders that are  
21 beginning to participate.

22 Another fact is the number of raters  
23 that are needed. We're currently involved with a  
24 program that requires third party testing of a  
25 homebuilder which will be the requirement of



1       between 20 and 25 thousand systems. That's being  
2       handled by 12 raters.

3               That indicates that there is not a huge  
4       need that we have to train and certify several  
5       hundred raters throughout the state. I'll just  
6       make this real simple as far as the mathematics of  
7       it. Assume that there are going to be 100,000  
8       starts and the sampling process is 15 percent,  
9       which I'm in agreement with Rick Wylie of doing  
10      something with appendix F, that's 15,000 systems,  
11      or 15,000 homes that have to be tested, not  
12      100,000.

13             If you multiply that based on a  
14      conservative number of the 50 raters that would  
15      potentially be involved, that would equate to  
16      about 36,000 systems we could test, but in  
17      actuality we only have to test 15,000.

18             The other fact: CHEERS is supported by  
19      a board of directors, when CHEERS was created in  
20      1991. That board of directors at a recent board  
21      meeting has provided as much support and will  
22      provide as much support as needed to support the  
23      ultimate regulations that come out.

24             There also has been a concern or an  
25      issue related to cost. Again, just simple

1       mathematics. You have a builder that builds 100  
2       homes; they have to test 15 of those homes.  
3       Assuming it's \$200 per test, which is pretty  
4       reasonable. We find raters going from \$125 up to  
5       \$300 a system, so you have to test 15 homes at  
6       \$200. That's \$3000. Spread that across 100  
7       homes, that's \$30 per home that the builder is  
8       paying for for quality assurance.

9               I'm sure the consumer is willing to pay  
10       \$30 in additional costs when they're investing a  
11       half a million dollars in purchasing the home.

12              The last couple items, and again I'll  
13       have -- is the question will be what happens if  
14       this regulation goes through and there is a  
15       requirement for third party verification. As I  
16       mentioned earlier, the board at CHEERS has  
17       provided a great deal of support and will provide  
18       more.

19              Currently CHEERS has nearly 12 training  
20       sessions scheduled next year. We also have  
21       identified several organizations that we can  
22       provide to certify and train those individuals.

23              The other issues related to third party  
24       verification, one of the comments earlier about  
25       the building officials, we approached a number of

1       those localities. The issues come around for  
2       several reasons -- or a couple issues is that the  
3       time consideration, the building officials are  
4       buried, as it is. And then two, cost  
5       consideration. Many of the cities aren't willing  
6       to spend the amount that's needed to purchase a  
7       duct blaster.

8               The final couple comments concerning the  
9       potential in our support of having third party  
10      verification as follows: Third party verification  
11      would create consistency among California and the  
12      national standards for HERS rating systems. It  
13      also would provide consistency with the EnergyStar  
14      requirements.

15             And finally, and it's still progressing  
16      somewhat, it also, with third party verification,  
17      would maintain consistency of federal tax credits  
18      that are still being proposed.

19             All this comes down to a simple fact is  
20      that at this point in time CHEERS has enough  
21      people to handle the systems that need to be  
22      tested. It's a matter of how it is implemented.

23             As I had mentioned earlier, we have this  
24      particular program where we're going to test  
25      between 20 and 30 thousand systems and that's

1 through the majority of the state and that's being  
2 handled by 12 raters.

3 With that, those are my comments.

4 MS. SHAPIRO: Thank you.

5 PRESIDING MEMBER PERNELL: It's been  
6 said that the third party verification doesn't  
7 work, nobody does this, but yet you have a program  
8 that tests, you know, 30,000 new homes.

9 So, sounds to me like somebody's doing  
10 it.

11 (Laughter.)

12 MR. HAMILTON: Well, there's a couple of  
13 programs. If you look at what we've been doing  
14 with EnergyStar, which requires third party  
15 verification for the past year to two years. It's  
16 a real simple transition between EnergyStar and  
17 the ACM.

18 I think there was a learning curve  
19 because the ACM was, in my view, was a dramatic  
20 change to the building standards which became  
21 effective in July of 1999. So there was a great  
22 learning curve.

23 I think many builders now, or the few  
24 that we have talked to, the dozen or so that are  
25 now taking advantage of it, have learned what the

1 process is and it's not so much cumbersome. At  
2 first it may be, but I think once they learn the  
3 benefits of it, that they can have somebody come  
4 out there for relatively inexpensive amount.

5 That if you're talking about \$3000 to  
6 test 15 homes on a multi-million dollar loan or a  
7 project, that's a drop in the bucket.

8 So there's been a transition and a  
9 learning curve between EnergyStar and the ACM, and  
10 I think with the program that we're doing where we  
11 will actually sample 15 percent of the 20 to 30  
12 thousand jobs, we haven't found a great deal of  
13 negativity towards it.

14 I think one of the changes that have  
15 been proposed where the rater goes out and selects  
16 which home to test, versus the HERS provider,  
17 makes it much easier. They go out, there's ten  
18 homes that are available, or say there's seven  
19 homes. They pick one of those homes versus where  
20 they have to go to us and say, we say go to this  
21 lot. That's where scheduling issues can be  
22 affected, and that's a good change going forward.

23 PRESIDING MEMBER PERNELL: Any questions  
24 from staff?

25 MR. PENNINGTON: No.

1                   PRESIDING MEMBER PERNELL: Thank you.

2                   MR. HAMILTON: Thank you.

3                   MS. SHAPIRO: I'm going to call next  
4                   Gordon Broberg, and while he's coming up I'm going  
5                   to tell you that we're going to do air  
6                   conditioning next, so we'll do ARI, then Lennox,  
7                   then GAMA and then Trane. In that order. So,  
8                   sir.

9                   MR. BROBERG: Thank you, Commissioners.  
10                  My name's Gordon Broberg, and I am the Regional  
11                  Manager for Robur Corporation. We manufacture  
12                  small tonnage gas cooling absorption units.

13                  And at the beginning of the hearings  
14                  today Bruce Wilcox mentioned that the goal in  
15                  developing these proposed residential standards  
16                  was the reduction of electrical on-peak demand.

17                  I think that's appropriate, consistent  
18                  with the spirit of AB-970. Gas cooling equipment  
19                  has the opportunity to make a clear and  
20                  significant impact on residential, on peak,  
21                  electric demand.

22                  At the September 25th hearing the  
23                  Commission made it clear that at this point in  
24                  time they did not have the time to develop  
25                  standards to include gas cooling. Though we

1 appreciate that, that this is an emergency set of  
2 standards. But the question then at this point in  
3 time is if not now, when will we be addressing gas  
4 cooling in the residential standards.

5 And when will we be able to compare gas  
6 cooling to gas cooling, rather than gas cooling to  
7 electric cooling.

8 The answer that I'm hoping to hear, and  
9 I don't expect an answer from the Commissioners  
10 now, but if the answer is not now or in this  
11 process, then the answer should be in the 2001  
12 standards to take effect in year 2002.

13 And I have not heard any feedback from  
14 the Commission as to what the intentions are and  
15 how to deal with gas cooling.

16 So, I guess the last point, and I'll  
17 make it short, is that Robur Corporation, along  
18 with other allies in the gas industry business,  
19 will continue to offer support to the Commission  
20 to develop -- the California Energy Commission to  
21 develop the standards to incorporate in for gas AC  
22 to incorporate in the standards.

23 That essentially means we will do some  
24 of those numbers at the direction. Any questions?

25 PRESIDING MEMBER PERNELL: Thank you.

1 Mr. Pennington, is there a response?

2 MR. PENNINGTON: Sure. Prior to the  
3 start of this AB-970 proceeding, the Commission  
4 Staff was working on a project to move towards  
5 time of use rates, and time of use valuing in the  
6 performance standards.

7 And we've made substantial headway on  
8 the conceptual framework for doing that, and  
9 there's been a lot of work done by utilities and  
10 consultants to the Energy Commission and to the  
11 utilities on that.

12 We have a considerable amount of work  
13 left to do actually, to finish that process. And  
14 there was no way we could do that during this  
15 timeframe, which turns into about 45 days for  
16 analysis.

17 And --

18 PRESIDING MEMBER PERNELL: Well, we're  
19 not suggesting that. I think one of the questions  
20 was --

21 MR. PENNINGTON: So what we're working  
22 towards is having that kind of a standard in place  
23 for the next triennial update of the building  
24 code, which would be the 2003-2005 building  
25 standards.



1                   There was a reference that he made to  
2                   could we do this. Presumably in the follow-on  
3                   that will follow the emergency proceeding, and  
4                   there hasn't been any policy set on what that  
5                   proceeding will do, as yet.

6                   But I would think that it would be very  
7                   inappropriate to be making substantial changes in  
8                   that kind of proceeding. And essentially  
9                   ratcheting the standards for the building industry  
10                  in such a short timeframe.

11                  And so I would advise that that's not a  
12                  good idea. To try to do it in the proceeding that  
13                  will follow this spring.

14                  PRESIDING MEMBER PERNELL: Right, but  
15                  your suggestion is the 2002-2005 timeframe?

16                  MR. PENNINGTON: Right.

17                  PRESIDING MEMBER PERNELL: Okay.

18                  MR. BROBERG: Can I respond to that?

19                  PRESIDING MEMBER PERNELL: Yes.

20                  MR. BROBERG: First of all, we think  
21                  that's unrealistic to ask an industry that's  
22                  trying to develop, and that delivers a product  
23                  that meets specifically California's issue, which  
24                  is capacity, gas cooling far more than any of the  
25                  issues that are before you today will reduce on-

1 peak demand much more significantly.

2 We are asking, as an industry, or  
3 offering, as an industry, to provide, with no  
4 charge, the support necessary to get this in the  
5 next set of standards, which I understand is  
6 2002 -- excuse me, 2001, to go into effect in  
7 2002.

8 So to ask us or other manufacturers of  
9 on-peak demand reducing technologies to wait till  
10 2005, I suggest that the issue will probably be  
11 over with respect to what AB-970 is trying to  
12 address.

13 PRESIDING MEMBER PERNELL: You know, I'm  
14 not sure we're asking you to do anything. You  
15 asked a question, we gave you an answer. This is  
16 an emergency proceeding. We can't just, and I  
17 think Mr. Pennington made a good point, and  
18 certainly you got -- we can't go through this  
19 proceeding and then interject a whole new  
20 technology. And I would submit that you would  
21 have more builders in this room than you have now.

22 You asked a question. What I'm trying  
23 to do is give you an answer, and say to stay  
24 engaged with the Commission and staff, and we can  
25 get that in. But certainly we don't want to

1       jeopardize -- and I don't think you would want us  
2       to jeopardize the proceeding we have now so that  
3       your industry can get in.

4               So, we're not trying to mandate you to  
5       do anything. We're just trying to give you an  
6       answer to the question you asked.

7               MR. BROBERG: No, and we're not asking  
8       also that our equipment be mandated to builders,  
9       just as a clarification. We just think that we  
10      are part of the solution to the problem, and we  
11      are offering to the Commission to provide whatever  
12      the Commission needs to incorporate into the  
13      standards.

14              So thank you very much for your time.

15              PRESIDING MEMBER PERNELL: Commissioner  
16      Rosenfeld has a --

17              COMMISSIONER ROSENFELD: Well, I was  
18      just going to say something I think encouraging to  
19      you. Clearly when we re-do title 24 to address  
20      variable time pricing, gas fired air conditioning  
21      is going to be extremely well.

22              The only problem is that there, as far  
23      as I know there are lots of great ideas out there  
24      that will do extremely well. There's white roofs.  
25      There's switches on pool pumps to turn them off at

1 the right time and so forth and so on.

2 And I just can't quite see picking one  
3 great idea when there are four or five that we  
4 have to address, and which I'm sure will get  
5 addressed in 2002 -- 2001 for 2002.

6 MR. BROBERG: Well, just as a point of  
7 clarification, Commissioner. We're not asking for  
8 anything other than to be able to in the game, so  
9 that when we have customers or builders or anyone  
10 who is interested in doing gas air conditioning,  
11 which reduces the on-peak demand, we want to be  
12 able to address that, just like you can electric  
13 air conditioning, in the title 24 standards.

14 We can do this on the commercial side,  
15 but we cannot do it on the residential side  
16 because we are always having to compare gas  
17 cooling to electric cooling.

18 Now, if the issue with AB-970, which is  
19 what all these hearings are about, is to reduce  
20 on-peak demand, why would you continue to develop  
21 standards that would eliminate on-peak demand  
22 technology from having a level playing field  
23 within the industry. I think that's the issue.

24 PRESIDING MEMBER PERNELL: Okay. Thank  
25 you.

1 MS. SHAPIRO: I have to ask Doug Bishop  
2 to come next, because I did not pay attention to  
3 his must-leave-for-the-airport note. So, Mr.  
4 Bishop, can you please come forward.

5 MR. BISHOP: Good afternoon. My name is  
6 Doug Bishop. I'm the Global Product Manager for  
7 large tonnage liquid chillers for Carrier  
8 Corporation.

9 The reason I'm speaking today is to  
10 promote improved methods for evaluating and rating  
11 chillers --

12 PRESIDING MEMBER PERNELL: Mr. Bishop,  
13 could you move the mike a little closer.

14 MR. BISHOP: The reason I am speaking  
15 today is to promote improved methods for  
16 evaluating and rating chillers which will result  
17 in the installation of energy efficient,  
18 economically viable air conditioning systems.

19 Traditional descriptors of chiller  
20 efficiency are kW per ton at full load, and more  
21 recently integrated part load value, or IPLV.  
22 Both methods are recognized in the industry  
23 standard for chillers which is ARI standard  
24 550.590.

25 kW per ton at designed full load has

1       been recognized for many years as inadequate since  
2       chillers operate at the rating condition less than  
3       5 percent of their life. The good thing about kW  
4       per ton is its simplicity and ease of use in  
5       specification.

6               An attempt was made to recognize the  
7       importance of part load efficiency by ARI in 1992,  
8       and again in 1998 at the request of the U.S.  
9       Department of Energy. Unfortunately IPLV is based  
10      on a number of simplifying assumptions about  
11      whether building load operating hours, economizer  
12      usage, and number of chillers, while a step in the  
13      right direction, these deficiencies were  
14      recognized in section D2.1 of the ARI standard,  
15      which I paraphrase as follows:

16             The equation was derived to provide a  
17      representation of the average part load efficiency  
18      of a single chiller. However, it is best to use a  
19      comprehensive analysis that reflects the actual  
20      weather data, building load characteristics,  
21      operational hours, economizer capabilities when  
22      calculating chiller and system efficiencies. This  
23      becomes increasingly important in multiple chiller  
24      systems. Unquote.

25             Keep in mind that multiple chiller

1       systems comprise at least 85 percent of the  
2       current installed base of chillers in the United  
3       States.

4               Carrier Corporation requests that the  
5       California Energy Commission consider the  
6       inclusion of an improved methodology which we  
7       refer to as system part load value, or SPLV.

8               This computer software based method uses  
9       project specific weather, load profiles for the  
10      building, operating schedules, number and size of  
11      chillers, and cooling towers, control sequences,  
12      economizer usage and local utility structures.

13              This data is used to generate an SPLV  
14      rating for a given chiller which more accurately  
15      correlates to kilowatt hour consumption and  
16      operating cost of the system.

17              SPLV strikes the proper balance between  
18      the need for easy to use, efficiency metrics and  
19      the actual performance of chiller systems.

20              We are joined in this effort by the  
21      other members of ARI to develop SPLV analysis and  
22      rating guidelines which are based on the ARI  
23      performance certification program. The USEPA and  
24      our customers have also responded positively to  
25      the SPLV approach.

1                   Carrier Corporation is dedicated to  
2                   provide support as requested by the California  
3                   Energy Commission to understand and utilize this  
4                   improved method for evaluating and rating chiller  
5                   systems.

6                   Thank you.

7                   PRESIDING MEMBER PERNELL: Thank you.  
8                   Any questions?

9                   COMMISSIONER ROSENFELD: Yes, just a  
10                  minute. Point of clarification. You said SPLV  
11                  provides data on an individual chiller. You  
12                  really mean on an individual system, don't you,  
13                  for a single building?

14                 MR. BISHOP: What I mean by an SPLV is a  
15                  rating method for an individual chiller, as a part  
16                  of a system of chillers --

17                 COMMISSIONER ROSENFELD: But it's --

18                 MR. BISHOP: -- operating in the  
19                  building.

20                 COMMISSIONER ROSENFELD: I see, but  
21                  where it performs on part load depends on the  
22                  system.

23                 MR. BISHOP: Yes, that's correct.

24                 COMMISSIONER ROSENFELD: Okay.

25                 MR. BISHOP: I've also brought along



1       seven copies for the Commission of a short writeup  
2       on this subject, which I'll leave.

3               PRESIDING MEMBER PERNELL:   Okay.

4               MS. SHAPIRO:   Thank you.

5               MR. BISHOP:   Thank you.

6               MR. MAHONE:   Can I ask a question about  
7       his proposal?

8               MR. PENNINGTON:   If you come to a mike.

9               MR. MAHONE:   The question is could  
10      this --

11              PRESIDING MEMBER PERNELL:   Would you  
12      identify yourself, please?

13              MR. MAHONE:   Douglas Mahone, Heschong  
14      Mahone Group.

15              The question is could this methodology  
16      also be used for other plant systems besides  
17      chillers, for example building with package  
18      rooftop systems?

19              MR. BISHOP:   I'd have to think about  
20      that.   My first reaction would be to say yes,  
21      wherever you had air conditioning systems which  
22      are multiple generators of cooling which are  
23      serving a given building system, such as a water  
24      source heat pump system or something of that  
25      nature.

1                   Where it probably wouldn't apply would  
2           be where you have a single zone package unit  
3           serving a system of VAV air terminals, per se.

4                   So I think it would depend on the  
5           system.

6                   MR. FERNSTROM: Gary Fernstrom, PG&E. I  
7           have a quick question, too. You characterized the  
8           methodology as a way of determining the economic  
9           efficiency in terms of energy use. How does it  
10          accommodate peak demand and peak demand charges?

11                  MR. BISHOP: There's a couple of ways  
12          that you can do that. And what this method does  
13          is it tries to strike the balance between the need  
14          for a very comprehensive front end of the program  
15          which would typically be an hourly analysis  
16          program, and also the requirement for transparency  
17          into the process of calculation and the outputs of  
18          the calculation process.

19                  So, as a method it is a bin hour method  
20          which by definition is not an hour-by-hour method.  
21          However, by doing one analysis with certain  
22          operating hours being included versus and  
23          comparing that to another analysis with those  
24          operating hours excluded, you could come to the  
25          same computational conclusion as a way of modeling

1 on-peak demand charges.

2 PRESIDING MEMBER PERNELL: Okay, thank  
3 you. You can pass those over to --

4 MR. BISHOP: Okay.

5 MS. SHAPIRO: Give them to Dee Anne.

6 MR. BISHOP: Thank you.

7 MS. SHAPIRO: Charles Segerstrom. And  
8 then ARI and Lennox. Thank you.

9 MR. SEGERSTROM: Good afternoon. My  
10 name is Charles Segerstrom. I'm Supervisor of  
11 Energy Efficiency Training for PG&E. And I would  
12 like to go back to the residential issues with  
13 respect to third party inspections and  
14 implementation details.

15 PG&E has vast experience with third  
16 party inspections, particularly with respect to  
17 tight duct programs, which we started in 1993. We  
18 continue to do an inspection protocol on a third  
19 party basis with in-house inspectors for our  
20 programs with over 20 percent inspections.  
21 Contrary to what may have been mentioned earlier.

22 And we're glad some contractors are  
23 doing so well they don't know that the inspections  
24 are happening.

25 (Laughter.)

1                   MR. SEGERSTROM: With respect to  
2                   implementation issues, my role has been  
3                   implementation for a number of years. And I  
4                   understand there are several serious  
5                   implementation issues, one of which is training,  
6                   another one is tools and availability of those  
7                   tools, and a third is availability of raters.

8                   With respect to training, for the last  
9                   three years we've been in a collaborative effort  
10                  with the Energy Commission to deliver about 35  
11                  classes per year related to this subject.

12                 We have done tight ducts training with  
13                  advertisements to northern California contractors  
14                  several times a year over that period. So, you  
15                  know, we have covered some bases that we think  
16                  will make implementation smoother.

17                 We're also prepared to dedicate  
18                  substantial resources to the education of building  
19                  departments, so we're prepared to meet the  
20                  challenge.

21                 From a training director's standpoint,  
22                  my only challenge is in getting the people in the  
23                  room at the right time. We're willing to muster  
24                  the resources to support building department  
25                  implementation.

1                   We're also willing to work with  
2       builders, continue to work with HVAC contractors,  
3       and also with CHEERS to support training, if  
4       possibly necessary, to increase the number of  
5       raters.

6                   We have actually scheduled in northern  
7       California three classes in the first quarter of  
8       the year to bring more of the verification raters  
9       into the program.

10                  With respect to tools, we've recently  
11       established a tool lending library that includes  
12       the duct testing equipment. We would be willing  
13       to loan tools to enable a shorter implementation  
14       process.

15                  So, from an implementation and training  
16       standpoint we stand ready to do whatever is  
17       reasonably necessary to support the standards  
18       effort. Thank you very much.

19                  PRESIDING MEMBER PERNELL: Thank you.

20                  MS. SHAPIRO: Okay, now we have ARI, and  
21       then Lennox, and then GAMA and Trane. So.

22                  MR. COULSON: Good afternoon, my name is  
23       Lake Coulson. I'm the Director of Legislative and  
24       Regulatory Affairs for the Air Conditioning and  
25       Refrigeration Institute. We're the leading trade

1       association representing over 240 companies  
2       comprising over 90 percent of the air conditioning  
3       and refrigeration industry.

4               ARI appreciates the opportunity to  
5       provide these comments and to participate in  
6       today's hearing. We also appreciate the  
7       willingness of the CEC to continue in the dialogue  
8       with industry representatives.

9               ARI and its members recognize that TXVs  
10       and economizers are available in the marketplace,  
11       and we do not, obviously, object to their usage.  
12       However, we do object to their inclusion through  
13       government mandate.

14              As such, we wish to express our concern  
15       with the proposed requirement for any technology,  
16       including thermal expansion valves or economizers  
17       as part of possible revisions to title 24 building  
18       energy efficiency standards for residential and  
19       nonresidential buildings.

20              As expressed by CEC Staff, TXVs are  
21       believed to help reduce peak electrical demand.  
22       ARI believes a rule requiring TXVs would be  
23       preempted by the federal statutes such as the  
24       Energy Policy Conservation Act, and later as  
25       amended by the NAECA.

1 Under these statutes no state regulation  
2 regarding energy efficiency or energy use of a  
3 covered product shall be affected.

4 Furthermore, the federal statutes  
5 expressly provided for narrow exemptions from  
6 preemption. In the absence of a preemption  
7 exception for TXVs, it is clear that Congress  
8 never intended for such a rule supporting TXVs in  
9 order to escape preemption.

10 Notwithstanding our concerns regarding  
11 the TXV proposal, ARI has concerns regarding the  
12 CEC's proposal to allow consumers the option of  
13 substituting TXVs when required with higher SEER  
14 level equipment.

15 Specifically in climate zones 9 through  
16 15 the CEC has proposed allowing equipment  
17 efficiencies ranging from an 11 to a 13 SEER. As  
18 we speak, and has been mentioned already today,  
19 the U.S. Department of Energy is considering  
20 amending the existing air conditioning standard.

21 Presently the SEER standard is a 10, and  
22 we believe similar to what I've said earlier  
23 regarding the CEC's proposed inclusion of TXVs and  
24 economizers in the regulation, California would be  
25 preempted from issuing its own regulations

1 concerning energy efficiency or energy use.

2 In the measure analysis or volume one  
3 pertaining to nonresidential building energy  
4 efficiency standard, the Commission lists several  
5 measures and modifications being considered. One  
6 of those measures include updating the HVAC  
7 equipment efficiency requirements to be consistent  
8 with ASHRAE 90.1.

9 We are encouraged by the State of  
10 California's consideration and updating of the  
11 90.1 energy standard. In doing so, 90.1 will  
12 prove beneficial to California's electric  
13 reliability situation and to consumers across the  
14 state.

15 We applaud areas where 90.1 has been  
16 adopted, however we question the CEC where it has  
17 deviated from 90.1, and has removed product choice  
18 from the consumer.

19 Specifically on page 65 of the November  
20 staff draft with regard to table 6 for air  
21 cooled, air conditioners and heat pumps, in both  
22 the 65k to 135k, and from 135k to 240k cooling  
23 capacities, the levels proposed are in excess of  
24 levels adopted in the ASHRAE 90.1 standard.

25 In conclusion, ARI does appreciate the



1 opportunity to offer these comments and reserves  
2 the right to add to its comments with future  
3 written and oral testimony.

4 Thank you.

5 MS. SHAPIRO: Thank you, Mr. Coulson.

6 PRESIDING MEMBER PERNELL: One question.  
7 You mentioned the federal government is going to  
8 have an AC standard. Do you have any idea when  
9 that's going to be?

10 MR. COULSON: The Department has  
11 expressed that the timeline, at least for issuing  
12 the new standard, will be sometime in mid January,  
13 and they're proposing January 20th to be specific.

14 The effective date of that new standard  
15 would be five years after the effective date of  
16 the standard being issued.

17 PRESIDING MEMBER PERNELL: Okay. Does  
18 staff have any --

19 MR. PENNINGTON: I'd like to get a copy  
20 of his comments, if that's possible.

21 PRESIDING MEMBER PERNELL: Okay, you  
22 guys can do that offline.

23 MR. COULSON: Yes.

24 MS. SHAPIRO: Okay. And close your cell  
25 phone, Nehemiah. Kyle, can you come up?

1 (Laughter.)

2 PRESIDING MEMBER PERNELL: Thank you  
3 very much.

4 MR. GILLEY: In consideration of the  
5 time my comments will be very brief, and I choose  
6 not to -- I'll just make comments one time.

7 MR. PENNINGTON: What is your name?

8 MR. GILLEY: Kyle Gilley with Lennox  
9 International. I don't choose to come back up in  
10 the nonresidential section.

11 My comments are conceptual in nature and  
12 I think can be covered at this point.

13 I want to publicly pledge Lennox's  
14 support of ARI's comments that were just made, and  
15 the comments of GAMA, where Joe Mattingly's coming  
16 up right after me.

17 We, too, share the concern with any  
18 mandated prescriptive measure being in violation  
19 of NAECA. The same goes for the SEER levels in  
20 six or seven of the climate zones in the proposed  
21 standards.

22 On a positive note, we applaud and  
23 support the efforts of the CEC in dealing with  
24 duct leakage. That's something that we work on  
25 internally with our dealers and certainly applaud

1       what you guys are doing in that area.

2                   And that's all I have to say.

3                   PRESIDING MEMBER PERNELL:   Okay, thank  
4       you.

5                   MR. GILLEY:   Thank you.

6                   MS. SHAPIRO:   Thank you so much.   Mr.  
7       Mattingly, can you come up.

8                   MR. MATTINGLY:   Good afternoon, my name  
9       is Joe Mattingly.   I'm General Counsel of the Gas  
10      Appliance Manufacturers Association.

11                   I'd just like to make a few brief  
12      remarks concerning the requirement for TXVs with  
13      respect to central air conditioners.

14                   Not a product within GAMA's scope, but  
15      GAMA is very concerned about bad precedents being  
16      set regarding preemption violations under NAECA.

17                   Roughly 14 years ago I participated in  
18      the drafting of NAECA, of the preemption  
19      provisions, and specifically the provisions  
20      regarding building code preemption.

21                   In looking at the draft it certainly  
22      seems to me to be a not at all subtle violation of  
23      federal preemption, this requirement for TXVs.

24                   And the way around it, of course, is for  
25      the California Energy Commission to apply to the

1 Department of Energy for a waiver from preemption.

2 If you can convince DOE to grant you a  
3 waiver, it was mentioned earlier is there a lead  
4 time, and it certainly is. There is, in fact, a  
5 requirement that a three-year lead time be  
6 provided so that the state regulation, if you were  
7 granted a waiver from DOE, could not be effective  
8 until at least three years after publication of  
9 the DOE rule granting the waiver.

10 Those are my comments. Thank you.

11 MS. SHAPIRO: Oh, thank you so much.

12 PRESIDING MEMBER PERNELL: Thank you.

13 MS. SHAPIRO: Mike Ray next from Trane,  
14 but while he's coming up I'm going to tell you  
15 that we'll have Jim Mattesich and then Ray from  
16 Merzon, and then Nehemiah if he -- yes. And then  
17 Maurice Reed and then Garrett Stone.

18 So we'll have Mike Ray now, and then  
19 switch to windows.

20 MR. RAY: In order to speed the process  
21 up, I'll be happy to go ahead and pass on me --

22 MS. SHAPIRO: Oh, I thank you so much.  
23 So, Mr. Mattesich, please.

24 MR. MATTESICH: Thank you, I, too, will  
25 be brief. I have a personal reason. In a few

1       minutes my car will be towed.

2                   (Laughter.)

3                   MR. MATTESICH: My name is Jim  
4       Mattesich. I represent Blomberg Window Systems,  
5       which is a medium sized business here in  
6       Sacramento producing high quality aluminum windows  
7       for more than 30 years.

8                   Blomberg has 130 employees, 85 of whom  
9       are members of the Glaziers Union, and we  
10      recognize the difficulty you face in that task  
11      that you have been given by the Legislature and  
12      AB-970. But I did want to address one issue.

13                  The Legislature, and I'm sure Mr.  
14      Ratliff has already advised you, didn't just give  
15      you exactly 120 days to accomplish the task. The  
16      provision does provide you with additional time as  
17      you needed, because it allows you to adopt the  
18      rules that you're proposing here within 120 days,  
19      or on the earliest feasible date thereafter.

20                  The reason I raise that is because we  
21      have only had a short period of time, four working  
22      days to be exact, since you published more than  
23      500 pages of documents supporting the proposal.

24                  We have not had sufficient time, in our  
25      view, to fully analyze that, not counting the

1 additions that were provided yesterday to some and  
2 available today.

3 But from our initial analysis this  
4 proposal, unfortunately and disproportionately,  
5 impacts aluminum window manufacturers and their  
6 employees.

7 In 1992, after almost a couple of years  
8 of working with the stakeholders, the CEC's  
9 fenestration rules still resulted in a  
10 disproportionate, and we felt at the time unfair,  
11 impact on aluminum window manufacturers.

12 In fact, for Blomberg the window unit  
13 sales were reduced from prior to that regulatory  
14 activity from 75,000 units a year to 45,000 units  
15 a year. Blomberg went from 210 employees to 145  
16 employees within two years of those fenestration  
17 rules being adopted.

18 We think that it's very important now to  
19 take the necessary time to insure that there are  
20 not going to be additional unnecessary losses to  
21 manufacturers such as Blomberg and their  
22 employees.

23 We understand from our initial analysis  
24 of the package that the energy savings from this  
25 proposal will not, in fact, be effective in time

1 to relieve the 2001 summer peak load demands. So  
2 we think that you have more time under the statute  
3 and in practical effect have more time to deal  
4 with this issue than in the very hurried manner  
5 that you've felt you've been required to do thus  
6 far.

7 A hurried action again is going to cost  
8 Blomberg and its employees -- and Blomberg is only  
9 one of a number of manufacturers in this position,  
10 I understand.

11 On page 1-3 of the summary before you,  
12 you've indicated there were a number of measures  
13 that were not included because they weren't  
14 feasible to address in 120 days.

15 The proposed fenestration U values we  
16 believe shouldn't be included because likewise  
17 there isn't enough time for a full analysis of the  
18 impact of those U values. We believe that the  
19 proposal that you ultimately adopt needs to be  
20 frame neutral.

21 On page 1-4 of the summary, the  
22 Commission Staff acknowledges that it didn't have  
23 time to determine the impact of requiring load  
24 conductance frames would have on manufacturers of  
25 higher conductance frames. And we applaud that.

1                   Yet, it's our understanding, from our  
2                   initial analysis, that the combination of the  
3                   proposed changes to both package D and the package  
4                   D alternative, will have a tremendous impact on  
5                   those same higher conductance frame manufacturers.  
6                   And we don't believe that there's been adequate  
7                   time spent addressing that.

8                   The Legislature mandated not only a  
9                   certain time period for the Commission to act, but  
10                  also that it consider the cost effectiveness of  
11                  its proposals. And it require only that which is  
12                  feasible.

13                  The impact on aluminum window  
14                  manufacturers from this proposal, and the jobs of  
15                  the employees of those manufacturers have to be  
16                  part of the cost effectiveness analysis, and the  
17                  feasibility determination that you have to make.

18                  And we urge you to take additional time  
19                  to do that. We are more than willing to work with  
20                  you in that effort. Thank you.

21                  PRESIDING MEMBER PERNELL: Okay, just a  
22                  couple questions. As I understand it, we're  
23                  not -- aluminum windows are not on the table  
24                  anymore, is that correct, Bill? Are we doing --

25                  MR. PENNINGTON: There aren't any



1 requirements in the package or the energy budget  
2 for --

3 PRESIDING MEMBER PERNELL: -- aluminum  
4 frame --

5 MR. PENNINGTON: -- nonmetal windows.

6 COMMISSIONER ROSENFELD: Say again? I  
7 didn't hear you.

8 MR. PENNINGTON: There aren't any  
9 requirements in the package or in the energy  
10 budget determination that would require nonmetal  
11 windows.

12 We completely kept that out as a  
13 concession to this industry.

14 MR. MATTESICH: But as we understand  
15 both the way package D and alternative package D  
16 will work, is that there will be an unfair and  
17 unlevel playing field between the window frame  
18 manufacturers because it will be an encouragement  
19 to use nonmetal frames in order to opt out of the  
20 two provisions which have been addressed here  
21 before, tight ducts and the TXV values.

22 PRESIDING MEMBER PERNELL: Commissioner  
23 Rosenfeld.

24 COMMISSIONER ROSENFELD: Could I just  
25 ask you a couple of numbers?

1 MR. MATTESICH: Certainly.

2 COMMISSIONER ROSENFELD: I'm sorry if  
3 I'm confused, but on table 1-3 says package D  
4 should require our U value of 0.65. Are you just  
5 saying you can't meet that?

6 MR. MATTESICH: That's correct.

7 COMMISSIONER ROSENFELD: But it doesn't  
8 say anything about aluminum.

9 MR. MATTESICH: No, but the effect of  
10 that will be to disadvantage metal, specifically  
11 aluminum window manufacturers.

12 It's our understanding, having reviewed  
13 the package in the short period of time that we  
14 have, --

15 COMMISSIONER ROSENFELD: What sort of U  
16 values do you get? Can you get?

17 MR. MATTESICH: What sort?

18 COMMISSIONER ROSENFELD: Yeah.

19 MR. MATTESICH: For the different  
20 systems --

21 MR. MEECHER: Charlie Meecher with  
22 Blomberg Window Systems. Our U values range from  
23 the .8 range down to the .5 range with the  
24 aluminum frames.

25 And with the inclusion of thermal

1 expansion valves and radiant barrier, you are able  
2 to use aluminum frames in the package program  
3 package D.

4 However, thermal expansion valves,  
5 radiant barrier and tight duct work may not be  
6 readily available as an inclusion in that package.  
7 Which would give a disadvantage to the aluminum  
8 frame products.

9 PRESIDING MEMBER PERNELL: Are the only  
10 type of frames your company makes are aluminum  
11 frames?

12 MR. MEECHER: We manufacturer a  
13 fiberglass product, also, but it's a very small  
14 part of our market.

15 PRESIDING MEMBER PERNELL: Do you know  
16 what percentage of the markets are aluminum now?

17 MR. MEECHER: For our products?

18 PRESIDING MEMBER PERNELL: For the  
19 percentage of the market of window frames.

20 COMMISSIONER ROSENFELD: Say within  
21 California.

22 MR. MATTESICH: Mr. Pernell, I'm told  
23 it's in the 30 to 40 percent range.

24 PRESIDING MEMBER PERNELL: So there are  
25 60 to 70 percent market out there that are not

1 aluminum frames?

2 MR. MATTESICH: That's my understanding.

3 PRESIDING MEMBER PERNELL: Any other  
4 questions?

5 MR. WILSON: I haven't looked at the  
6 NFRC directory in quite awhile, but I assume that  
7 there are a lot of aluminum frame windows that  
8 meet the .65 U value requirement, is that right?

9 MR. NITTLER: Can I address that, Bill?

10 MR. PENNINGTON: Sure.

11 MR. NITTLER: There's a letter on the  
12 docket that's written on behalf of the Western  
13 Region of the American Architectural Manufacturers  
14 Association.

15 And in that letter they requested they  
16 had seen some of the preliminary analysis and  
17 asked us to look at a few U value issues, and  
18 requested that we use values of .65 for aluminum  
19 windows.

20 Just to read one sentence from it: Our  
21 requested U value numbers, that's referring to the  
22 .65, are also thought to be do-able with a minimum  
23 amount of time consuming tooling and design  
24 changes.

25 I would say from my experience the

1 majority of aluminum product --

2 MS. SHAPIRO: Speak into the mike,  
3 people are doing this.

4 MR. NITTLER: The majority of aluminum  
5 product out there that's sold in the California  
6 market with the low solar, low E glass, meets the  
7 .65 requirement. And that's why that number was  
8 chosen.

9 There are some products that have higher  
10 profiles where that may not be true.

11 Just two other brief points. The  
12 current standard references U values that are, in  
13 many climate zones, identical to what's referenced  
14 in this proposed standard. So there are many  
15 products that have continued to be used because of  
16 the tradeoffs, even though the numbers haven't  
17 really changed.

18 I mean they are products that didn't  
19 comply before, if you want to think of that way,  
20 that are still being used because of tradeoffs.  
21 That will be true in the future.

22 And basically the final comment is, to  
23 reiterate what Bill was saying, all 16 climate  
24 zones the package D requirements are based on an  
25 aluminum frame window. That is what's in the

1 packages.

2 MR. MATTESICH: If I might just respond.  
3 I mean I heard what Mr. Nittler said, and with all  
4 due respect, he indicated that there were, he  
5 thought, a majority of the windows. There are a  
6 large portion of the aluminum windows which would  
7 not meet the proposed .65. And that is my  
8 understanding of the facts.

9 PRESIDING MEMBER PERNELL: I know that  
10 this Commission has been sensitive to your company  
11 and its issues. And I thought we had taken care  
12 of those in some instances.

13 So, I think we've moved a long way from  
14 where we started. And so I'm at a little bit of a  
15 dilemma because what would be your recommendation  
16 if we -- we're not excluding aluminum frames. I  
17 don't understand what you would want us to do, in  
18 your view, to level the playing field here.

19 MR. MATTESICH: We will be happy to work  
20 with staff to come up with a proposal to do that.  
21 Again, because this company is a small to medium  
22 sized company that's only recently understood what  
23 the impact would be --

24 PRESIDING MEMBER PERNELL: Okay, so  
25 if --

1                   MR. MATTESICH:  -- and we do appreciate  
2                   the fact that the Commission, Mr. Pernell has  
3                   worked with us in the past.  But at present we  
4                   feel as though this package, as we've analyzed it  
5                   over this past weekend, does impact us  
6                   tremendously and unnecessarily.

7                   And we would be willing to work to try  
8                   to correct that to the extent that we can do that.

9                   PRESIDING MEMBER PERNELL:  Okay, that's  
10                  fair enough.  I would ask that you work with staff  
11                  and see if we can come up with some common ground.

12                  MR. MATTESICH:  Thank you.

13                  MS. SHAPIRO:  Ray.

14                  MR. BJERRUM:  I'm Ray Bjerrum with  
15                  Merzon Industries.  We are a manufacturer of  
16                  windows in Fresno.  I'm here representing a group  
17                  of manufacturers.

18                  We had a position paper that's been  
19                  presented to the Commissioners and staff.  There's  
20                  been a lot talked about today.  I will not read  
21                  this into the record.  I'm going to try to be as  
22                  brief as possible, but I would say that out of the  
23                  25 manufacturers that we sent this out to, we had  
24                  16 manufacturers respond in support, with one not  
25                  supporting.

1                   Our position would be that, yes, the  
2                   aluminum windows and the .65 is do-able, and I'd  
3                   like to clarify something. The .65 also indicates  
4                   that you have solar heat gain, the spectrally  
5                   selective glass in it. Because a clear aluminum  
6                   window will not get to .65.

7                   So the assumptions is with the new regs  
8                   you will be, in fact, putting in the new  
9                   spectrally selected glass. And that will probably  
10                  take the majority of aluminum windows under .65.

11                  The problem that we see here and the  
12                  biggest problem is the tight ducts. And if, in  
13                  fact, you're going to leave those ducts loose, the  
14                  tradeoff is going to be a loss in the fenestration  
15                  industry. And our feeling is there's about 40  
16                  percent aluminum. And in that area the aluminum  
17                  will lose. And we could also see a loss of market  
18                  share by the fact that just square footage would  
19                  be regulated out, or it would be, as they  
20                  calculate the house you would end up losing the  
21                  square footage on fenestration.

22                  So the tight duct seems to be a real  
23                  problem for us. And in the presentation we're  
24                  asking for some sort of delay or have the  
25                  Commission work on the tight ducts sort of a



1 phase-in period.

2 And with that phase-in period you would  
3 allow the ducts to comply easier, and I'm not sure  
4 how you would do that. Listen to everybody talk  
5 today. We would recommend some sort of phase-in  
6 period, and not to -- to be able to allow the  
7 fenestration industry to catch up to this.

8 But we would support it as written.

9 PRESIDING MEMBER PERNELL: Okay,  
10 questions?

11 MR. PENNINGTON: You had a specific date  
12 in your --

13 MR. BJERRUM: Yeah, we had said not  
14 before January 1, 2002.

15 I'd like to make a comment about  
16 certification, there's been some issues bantered  
17 back and forth.

18 Being involved with NFRC certification  
19 since 1992, watching certification having the  
20 fights here with the Energy Commission on  
21 certification, there is something to be done.

22 Your protocols on the ducts are very  
23 difficult. And I would agree with Mr. Wylie that  
24 you should pick just one type of -- one out of  
25 seven, keeping track of the -- if you read it,

1       it's very difficult. I can see why it wasn't put  
2       into place.

3               And I don't see any chance of being put  
4       in place in the way it's written right now. So  
5       you might consider something like Commissioner  
6       Rosenfeld said, some area of certification. You  
7       could reduce -- that there could be some sort of  
8       verification through a third party and still allow  
9       the air conditioning industry to comply and sort  
10      of come to a happy medium between outside  
11      verification and the industry verification.

12              PRESIDING MEMBER PERNELL: Okay, one  
13      question, and I'm not understanding this, you  
14      mentioned that tight ducts create a problem for  
15      the window manufacturers?

16              MR. BJERRUM: Well, if we're to assume  
17      that what we're hearing today, tight ducts are  
18      very difficult to do, then if the industry cannot  
19      comply with tight ducts, immediately package D  
20      alternative would be what would be selected. And  
21      that would put a strain on the fenestration  
22      industry in total.

23              PRESIDING MEMBER PERNELL: Oh, I see, so  
24      if the contractors choose the alternate package,  
25      then that puts a perceived burden on your

1 industry?

2 MR. BJERRUM: Right, and what we pointed  
3 out in here is the fact that if, in fact, this  
4 happens that you don't do something with tight  
5 ducts, you could end up with fenestration being  
6 the only place that people can go with tradeoffs,  
7 which would limit fenestration and you'd still end  
8 up with no tight ducts until you changed the  
9 regulations.

10 But what I hear today you're trying to  
11 work it out through the tight ducts and have some  
12 sort of certification. And we would encourage  
13 that. We would encourage that everybody should  
14 have tight ducts.

15 PRESIDING MEMBER PERNELL: Mr.  
16 Pennington.

17 MR. PENNINGTON: I think the window  
18 industry is not understanding our standards  
19 somewhat in their comments.

20 They appear to be thinking that the  
21 prescriptive approach is the predominant approach,  
22 and the alternative that we created for package D  
23 will get wide use.

24 In reality there's a very limited number  
25 of buildings in California that comply with the

1       prescriptive approach. You know, 80 percent plus  
2       use the performance approach.

3               So those packages really are not  
4       terribly relevant to what builders actually will  
5       choose to do.

6               In fact, probably more relevant would be  
7       the kind of analysis that Ken Nittler did in his  
8       report showing, you know, what are the costs to  
9       builders.

10              And if you look at that analysis there  
11       are a lot of builders that are already using  
12       nonmetal windows for complying with the standards.  
13       They've already made that choice. In a few  
14       climate zones that looks like a good thing to do,  
15       to switch.

16              In some cases we found that it wasn't  
17       really necessary to go to nonmetal to comply. And  
18       so we backed away from having nonmetal windows as  
19       a part of that, and went to aluminum windows as a  
20       choice.

21              So there's a lot of choices here for the  
22       industry that's not indicated by those  
23       prescriptive packages that are getting such a  
24       strong reaction.

25              PRESIDING MEMBER PERNELL: Okay, but --

1                   MR. BJERRUM: I would disagree in the  
2 fact that there is an alternate calculation method  
3 that's going to be based on whether you'd have  
4 tight ducts or not.

5                   PRESIDING MEMBER PERNELL: Let me just  
6 say that I don't want to get into a debate here  
7 because we're running out of time and we have  
8 people who have been here all day to speak.

9                   I would ask that you get with staff,  
10 your industry. We understand that, you know, that  
11 we have stakeholders here that are local, that are  
12 not a large company, don't have a lot of  
13 resources. But I'm sure that staff -- matter of  
14 fact, I'm positive that staff will explain this  
15 and we can work on it. I just don't want to do it  
16 here in this proceeding.

17                   So, I would ask the industry to get with  
18 staff so that you both understand what's going on.  
19 Our intention is to have tight ducts. We think  
20 tight ducts work. I think that it's already out  
21 there in the marketplace, it's proven, so we just  
22 got to get there.

23                   MR. BJERRUM: And our industry would  
24 encourage that.

25                   PRESIDING MEMBER PERNELL: Thank you.

1 MS. SHAPIRO: Nehemiah Stone, please.

2 MR. STONE: I'm going to make my  
3 comments so brief that I don't need to sit down.

4 MS. SHAPIRO: Nehemiah, I love that.

5 MR. STONE: First off, Nehemiah Stone  
6 with the Heschong Mahone Group.

7 I was involved with the standards  
8 process a few times in the past, and I would like  
9 to echo what a couple of the people have said, and  
10 commend staff and the contractors on the excellent  
11 job in doing what they've done in 60 days what it  
12 took us three years to do in '92.

13 Secondly, the next comment I have to  
14 make is a real minor change, and that is that the  
15 industry standard name for U value is no longer U  
16 value, it's U factor. It's changed in the first  
17 element of the standards 10-111, it's changes in  
18 the nonresidential section, and it needs to be  
19 changed through the residential, also.

20 The second has to do with what Ray  
21 Bjerrum was getting at, and for those who have not  
22 been involved in the standards process over the  
23 last ten years, Ray deserves an awful lot of  
24 respect for representing his industry extremely  
25 well, even when at times it meant difficulty for

1 his own company.

2 The issue that Ray is trying to get at  
3 of people trading off fenestration area for tight  
4 ducts in order to get out of tight ducts, I  
5 personally think is probably a nonissue because I  
6 doubt that builders make architectural decisions  
7 about how much fenestration they're going to have  
8 based on something like that.

9 But even if it were, what I'd like to  
10 offer is that perhaps the Commission could  
11 consider setting up the ACM rules for the modeling  
12 program so that you cannot trade off fenestration  
13 area for something like the tight ducts.

14 One other comment I wanted to make. At  
15 the AAMA Western Region meeting about a month ago  
16 one of the window manufacturers who quite honestly  
17 was very opposed to what we were doing in 1992  
18 recommended that in order to cut through the  
19 problems of tradeoffs you ought to simply make  
20 high performance windows mandatory everywhere in  
21 California. And I would support that  
22 recommendation.

23 And the last thing is something I just  
24 realized in looking through the manual. It hasn't  
25 come up in any of the discussions and I think it's

1 something that deserves some attention, and that  
2 is that one of the recommendations is to totally  
3 eliminate package A.

4 And for those who are not familiar with  
5 the historical significance of that, package A was  
6 the beginning of the standards. That was the  
7 place where the residential building standards  
8 started. And that was -- basically it's the solar  
9 package.

10 And I would recommend that the  
11 Commission not eliminate package A. I realize how  
12 little it is used right now, but its historical  
13 significance as being the right way to design a  
14 building, I think needs to remain within the  
15 standards.

16 There's a lot of recommendations that  
17 have come through over the years of kind of  
18 glomming everything together because it's roughly  
19 equal to something else. And it overlooks  
20 attention to good design, which starts with the  
21 orientation of the building, starts with where  
22 your fenestration is, starts with where your  
23 overhangs are, and how much mass you have. And  
24 that's what package A is, and I believe it ought  
25 to remain in the standards.



1                   PRESIDING MEMBER PERNELL: Okay, thank  
2                   you. Good recommendations.

3                   MS. SHAPIRO: Maurice Reed.

4                   MR. REED: My name is Maurice Reed. I'm  
5                   here representing the Sacramento Building and  
6                   Construction Trades Council, an umbrella group  
7                   representing 25,000 union construction workers in  
8                   five counties around Sacramento.

9                   I want to first echo the comments of Mr.  
10                  Jim Mattesich regarding Blomberg Glass. Blomberg  
11                  Glass is an all-union firm. They make one of the  
12                  finest windows in the United States. They have a  
13                  national reputation for quality, beauty and energy  
14                  efficiency.

15                 We would like to see that that  
16                  continues, and that nothing that this body does  
17                  puts our members out of work. They proudly make  
18                  these windows and install them. And I might add  
19                  that they're the windows that are installed in the  
20                  Energy Building here.

21                 So, please keep our people working.  
22                  Thank you.

23                  PRESIDING MEMBER PERNELL: Well, we  
24                  certainly want to do that, Maurice. Thank you.

25                  MS. SHAPIRO: Garrett Stone.

1                   MR. STONE: I have some overheads I had  
2                   given you. Ms. Shapiro, do you have them?

3                   MS. SHAPIRO: I think I passed them out  
4                   to everybody.

5                   MR. STONE: Okay. I have some quick  
6                   overheads. I'm Garrett Stone on behalf of  
7                   Cardinal IG. And we have some comments on the  
8                   proposed revisions to the standards.

9                   Next slide, please. Let me tell you,  
10                  you probably know who Cardinal IG is, but just to  
11                  remind you, the nation's largest manufacturer of  
12                  insulated glass units, and in particular low  
13                  solar, low E glass in the country.

14                 We participated in the last proceeding a  
15                 few years ago. We're participating here. We're  
16                 very interested in what California has done and is  
17                 doing. In fact, we built a plant in Galt,  
18                 California in part because of what California is  
19                 doing in moving towards high performance  
20                 fenestration. And the Plant Manager, Ron Parker,  
21                 is here, and Jim Larson, our Technical Director.

22                 We think the most critical issue of all  
23                 the issues in the standards that deal with peak  
24                 demand is fenestration solar gain.

25                 Next slide. Fenestration solar gain, of

1 course, helps both with peak demand and with  
2 energy savings, and a lot of the proposals that  
3 have been put forward by the staff here  
4 incorporate that. And we think that's great.

5 In fact, we've looked specifically at  
6 the ones that are related to fenestration, and in  
7 general, we support them, in particular the  
8 prescriptive requirements for the .4 solar heat  
9 gain coefficient in package D. The additions and  
10 alterations, picking those up and apply the .4  
11 solar heat gain coefficient to those in the  
12 appropriate climate zones.

13 Going beyond that, next slide please,  
14 beyond our support for the proposals that the  
15 staff and contractors have put forward, we would  
16 recommend two addition, we think are simple, but  
17 critical changes that the Commission ought to  
18 consider to go beyond that to really capture the  
19 peak demand and energy savings benefits from  
20 windows.

21 One of them is replacement fenestration.  
22 It's already been mentioned a couple of times  
23 today already. We think that you ought to extend  
24 the same criteria that applies to additions,  
25 alterations and new construction to replacement

1 fenestration, as well. In other words, the U  
2 factor standard and the solar heat gain  
3 coefficient standard.

4 Replacement windows make up half the  
5 marketplace. That's half the marketplace that's  
6 being left on the table if we don't do anything  
7 about it.

8 Secondly, we suggest that sort of along  
9 the lines of what Mr. Stone said, that there is an  
10 ability to capture solar heat gain coefficient  
11 performance if we made mandatory a .4 solar heat  
12 gain coefficient across the state, at least in the  
13 climate zones where it seems to be cost justified,  
14 which were the climate zones that it's now in the  
15 prescriptive package.

16 That would be a way to capture not just  
17 the energy savings, but also the peak demand. The  
18 fear being, of course, that if you trade off the  
19 energy saving -- excuse me, if you trade off the  
20 windows for something else that might save energy  
21 in the same amount, but doesn't save peak demand  
22 because it doesn't affect the summer peak demand  
23 load issue then we lose. All of us lose.

24 And if part of the main goal in this  
25 process is do deal with peak demand, then I think

1 we ought to at least take that into consideration.

2 Next slide, please. I've listed here  
3 and on the handout, and I won't go into all of  
4 them in detail by any means, but I've listed here  
5 some of the issues that are related to why we  
6 ought to consider replacement windows.

7 After all, the Commission's authority  
8 extends to whenever a building permit is issued;  
9 where permits are issued for replacement windows  
10 it seems to be appropriate to go ahead and apply  
11 the standard.

12 If permits are not issued, well, the  
13 standard is still out there, sort of like a speed  
14 limit, and sort of tells people where it's  
15 supposed to be. Obviously if there's no permit  
16 issued then there's going to be no enforcement.  
17 But that's true of any alteration.

18 Similarly, 40 percent of the air  
19 conditioning load and fenestration is being  
20 impacted -- is caused by solar heat gain. It  
21 needs to be addressed.

22 Like I said, lastly, there's such an  
23 opportunity here in terms of capturing the other  
24 half of the market by going and getting  
25 replacement as well as new.

1                   Next slide, please. This is the  
2                   existing alteration section in the code right now.  
3                   It says -- it's a note, actually, it's an  
4                   exception down at the bottom which says,  
5                   basically, it describes alterations if you look at  
6                   the definition of alterations replacement would be  
7                   included in it. But it has a provision that says,  
8                   a note at the bottom that says, fenestration  
9                   products repaired or replaced not part of an  
10                  alteration need not comply with the U value  
11                  requirements applicable to alterations.

12                  Next slide, please. This is our  
13                  proposal. It's in the document. How we would  
14                  change it. We would say replacement fenestration  
15                  products are considered an alteration and should  
16                  comply with the SHGC and U value requirements  
17                  applicable to alterations.

18                  Of course, repair shouldn't, and we left  
19                  repair out.

20                  Next slide, please. We think it's a  
21                  huge window of opportunity. We listed some of the  
22                  reasons. One of them being -- play on words  
23                  here -- one of them being the International Energy  
24                  Conservation Code recently did the same thing in  
25                  1998, adopted standards for replacement

1 fenestration. Also for additions that included a  
2 .4 solar heat gain coefficient in cooling  
3 climates.

4 With the adoption of AB-970 it should be  
5 no doubt that this is the opportunity to capture  
6 these peak demand as well as energy saving  
7 benefits.

8 Next slide. Our other idea that I  
9 mentioned was mandatory requirements for  
10 fenestration products. I should mention we filed  
11 comments early this month, November 7th, November  
12 8th, thereabouts, listing some of this stuff in  
13 more detail. But I did want to at least bring it  
14 to everyone's attention again that we think one  
15 way to deal with this peak demand problem and  
16 protect against the loss of the peak demand  
17 protection by, like I said, someone trading off,  
18 getting energy savings with some other measure but  
19 not getting peak demand, is to mandate solar  
20 control glass. Mandate a .4 solar heat gain  
21 coefficient to be achieved. And this discusses  
22 that.

23 That's all I have. Do you have any  
24 questions?

25 MS. SHAPIRO: I have one question.

1 MR. STONE: Yes.

2 MS. SHAPIRO: Any problem with supply of  
3 this kind of glass? If we extended it to  
4 replacement windows? Because replacement windows  
5 is a big market.

6 MR. STONE: We estimate that replacement  
7 and remodeling is at least half of the whole  
8 market. Now, of course, you're extending it --  
9 you have new and remodeling now, but you don't  
10 have replacement.

11 It's our belief that there's sufficient  
12 capacity in California alone to supply basically  
13 every window in the state with low solar gain, low  
14 E, both from our facility as well as from -- we  
15 have another facility, additional facilities on  
16 the west coast, but there are other manufacturers  
17 who have facilities in California, as well.

18 And in fact our president wrote a  
19 letter, I believe, to the Commissioners laying out  
20 the availability of supply and our belief that  
21 there's adequate supply to basically supply every  
22 window in California.

23 MS. SHAPIRO: Thank you.

24 MR. STONE: Thank you.

25 PRESIDING MEMBER PERNELL: Any other



1           questions? Thank you.

2                   MR. STONE: Thank you.

3                   MS. SHAPIRO: Okay, we are now into  
4           nonres.

5                   MR. PENNINGTON: Before we go to nonres  
6           I have a letter that the Department of Housing and  
7           Community Development brought over. It's a fairly  
8           lengthy, about a two-pager.

9                   MS. SHAPIRO: You want me to read it  
10          real fast.

11                  MR. PENNINGTON: Do you want me to read  
12          it, or do you want me to docket it?

13                  MS. SHAPIRO: Just docket it.

14                  MR. PENNINGTON: What's your choice.

15                  PRESIDING MEMBER PERNELL: Yeah, can you  
16          summarize it?

17                  MR. PENNINGTON: Sure.

18                  MS. SHAPIRO: I can read it faster  
19          than --

20                  MR. PENNINGTON: That's probably true.

21                  PRESIDING MEMBER PERNELL: Why don't --  
22          whichever is faster. If you want to read it into  
23          the record, we can do that. Or you can summarize  
24          it.

25                  MR. PENNINGTON: Okay, I'll skip the --

1 well, do you want me to read it?

2 PRESIDING MEMBER PERNELL: Skip all the  
3 nice things they're saying about us.

4 MR. PENNINGTON: The Department of  
5 Housing and Community Development is the  
6 primary state agency responsible for the  
7 establishment and the implementation of state  
8 policies related to decent and affordable  
9 housing for all California residents. As  
10 such we review local, state and federal  
11 government proposals and policies which may  
12 impact affordability and safety.

13 Of course we also support the need for  
14 energy conservation and energy efficiency,  
15 both of which collaterally impact the cost of  
16 rental and ownership housing.

17 The triple whammy of population growth,  
18 escalating rents and purchase costs, and the  
19 decline of affordable housing stock will put  
20 further strain on an already over-stressed  
21 system. These problems cannot be addressed  
22 without the increasing housing production.

23 California needs about 100,000 housing  
24 units per year, more than recent production  
25 levels, most of which must be affordable to

1 lower and middle income purchasers and  
2 renters. Unmet affordable housing needs are  
3 projected at 3.1 million units by 2010.

4 California also need to insure that  
5 existing units can be preserved and upgraded  
6 without unreasonable impediments.

7 During recent weeks staff from HCD's  
8 Division of Codes and Standards and Housing  
9 Policy Development have met with the  
10 California Energy Commission Staff regarding  
11 the proposed energy efficiency standards for  
12 new and rehabilitated/remodeled single family  
13 and multifamily housing. We have expressed a  
14 number of concerns outlined below, and have  
15 been assured that our concerns have either  
16 been addressed or do not arise under the  
17 proposed new standards.

18 Given the necessity of fast-tracking  
19 these proposed regulations and our desire to  
20 continue working with CEC Staff on details,  
21 we will reserve our right to comment on the  
22 standards during the 45-day comment period.

23 However, we would like CEC members to  
24 understand our concerns. Number one: The  
25 cost for newly constructed single family

1 homes is projected to range between zero  
2 dollars and about \$1000 with an average of  
3 \$328. This, if correct, is not a significant  
4 impediment to affordability if only this cost  
5 were passed through to buyers and there were  
6 commensurate monthly energy cost savings.

7 However, we continue to be concerned  
8 that the value of these improvements, rather  
9 than the cost, will be passed through. And  
10 that buyers will have to pay a price inflated  
11 by the capitalized savings from energy  
12 efficiency.

13 Number two: The cost to newly  
14 constructed multifamily rental developments  
15 is projected to be zero dollars because of  
16 existing flexibility within the energy  
17 budget. We cannot determine the accuracy of  
18 this figure. However, there may be some  
19 costs incurred by builders, and we would hope  
20 that these costs were not passed through to  
21 renters who currently face a significant  
22 affordability crisis.

23 We also continue to be concerned that  
24 the value of these improvements, rather than  
25 the cost, will be passed through. And that

1           renters will have to pay a price inflated by  
2           the capitalized savings from energy  
3           efficiency.

4                   Number three. We are very concerned  
5           about the impact of making these standards  
6           applicable to rehabilitation and remodeling.  
7           Current state law allows the continuation and  
8           replacement of existing materials, appliances  
9           and methods of construction during  
10          rehabilitation and remodeling as long as the  
11          building is not substandard. Imposing  
12          significant new costs for energy conservation  
13          may discourage repairs and rehabilitation,  
14          contrary to state policies, to preserve  
15          housing.

16                   CEC Staff has advised our staff that the  
17          standards will apply only to new construction  
18          with minor exceptions. However, we are  
19          concerned that compliance will not be  
20          possible in newly constructed areas without  
21          higher energy efficiency being added in other  
22          parts of a structure.

23                   In addition we seek clarification on  
24          what requirements will be imposed in other  
25          portions of a home or development.

1           Number four. Finally we have expressed  
2           concerns regarding the impact of the one-  
3           month period prior to the effective date as  
4           it relates to government-subsidized  
5           affordable housing, both single family and  
6           multifamily.

7           These types of developments often  
8           require a one-year period of time prior to  
9           pulling permits in order to apply for, obtain  
10          and coordinate various sources of funding,  
11          sometimes involving private, federal, state  
12          and local sources. Some of these lenders do  
13          not permit any changes in costs (except those  
14          absorbed in contingency funds).

15          The proposed standards, with their short  
16          effective date, may imperil some of these  
17          affordable housing developments. We have no  
18          suggested alternative at this time, but hope  
19          within the next several weeks to work with  
20          affordable housing sponsors, other government  
21          financing entities and CEC Staff to assess  
22          the problem and propose alternatives.

23                 If you have any questions or concerns  
24                 regarding this matter, please call me.

25                 Sincerely, Ronald S. Chivour, Assistant

1 Deputy Director."

2 MS. SHAPIRO: Thank you, Bill.

3 PRESIDING MEMBER PERNELL: Okay.

4 MR. EILERT: My name is Pat Eilert from  
5 PG&E. May I make one comment on affordability?

6 PRESIDING MEMBER PERNELL: Yes.

7 MR. EILERT: Just to kind of reiterate a  
8 discussion that was started earlier, if you take a  
9 look at what the monthly increase on a 30-year  
10 fixed-rate mortgage would be on say, even a \$2000  
11 incremental cost here, it would be less than \$15 a  
12 month.

13 Another way to look at this is a quarter  
14 percent change in interest rate on a \$200,000 home  
15 would be \$35 a month or so forth.

16 And, you know, by the time you take into  
17 account loan to value ratios of 90 percent or so  
18 for the down payment, it's very low. And if you  
19 actually assess the value of these energy  
20 efficiency upgrades appropriately, it can actually  
21 lead to a decrease in the down payment on a house.

22 Thank you.

23 PRESIDING MEMBER PERNELL: All right.

24 Can we go off the record a minute.

25 (Off the record.)

1                   PRESIDING MEMBER PERNELL:   And we want  
2                   to start the portion of nonresidential buildings.  
3                   And we'll have -- actually, I'll let Mr.  
4                   Pennington do the introductions.

5                   MR. PENNINGTON:   Great.   So, we're ready  
6                   for the second half of our hearing.   I'd like to  
7                   introduce our contractor team here:   Mr. Charles  
8                   Eley of Eley Associates; Mark's not here, Mr. Mark  
9                   Hydeman of Taylor Engineering; and Mr. Mark Modera  
10                  of Lawrence Berkeley National Lab and AeroSeal.

11                  And Charles is going to lead the  
12                  presentation.

13                  MR. ELEY:   I'd also like to introduce  
14                  Joe Kastner and Arman Chihavi with Eley Associates  
15                  that have contributed to this.

16                  I'll start with a summary of the changes  
17                  that are being proposed for nonresidential  
18                  buildings.   The most significant change in terms  
19                  of energy savings is to update the U factor and  
20                  SHGC criteria for windows and skylights.

21                  There's also a credit being offered for  
22                  cool roofs.   There's a number of miscellaneous  
23                  small changes to lighting power allowances, rules  
24                  for compliance, with some control requirements for  
25                  lighting.



1           There's a number of miscellaneous  
2       changes to the HVAC requirements having to do with  
3       equipment efficiency economizers, demand control  
4       ventilation, tight duct insulation and cooling  
5       tower fans.

6           And finally the nonresidential  
7       standards, at least in the ACM, will include some  
8       consideration of HVAC ducts. And these are only  
9       for packaged equipment in small applications.

10          Next slide, please. We're talking about  
11       some pretty significant savings here. We estimate  
12       that the annual savings would be on the order of  
13       80 gigawatt hours a year with about 700,000 therms  
14       a year.

15          The peak demand is almost 50 megawatts.  
16       This is noncoincident. If you look at the  
17       coincident savings on July 18th, it's about 36  
18       megawatts. So these are quite significant  
19       savings. Almost on par with low rise residential.

20          These estimates are documented in volume  
21       four of the research, and they're based on the  
22       database of 990 nonresidential buildings that have  
23       statistical weights so that they represent  
24       statistically new construction activity in  
25       California.

1                   Next slide, please. This is going to be  
2                   a little difficult to read probably, but I wanted  
3                   to contrast here some of the economic assumptions  
4                   that we're using.

5                   The process that we're using is to  
6                   assign a value to a kilowatt hour of savings, and  
7                   to a therm of gas savings. When ASHRAE cross-  
8                   justified its requirements they were based on 64  
9                   cents for a kilowatt hour saved over the life of  
10                  the building present value. And about \$4.50 for a  
11                  therm of gas saved over the life of the building.

12                  For the fenestration requirements the  
13                  value we're assigning is \$1.68. Almost three  
14                  times greater. This is based on the 30 year life  
15                  cycle cost analysis. A 15 year life cycle cost  
16                  analysis is used for HVAC and lighting measures  
17                  since that equipment doesn't last as long. And  
18                  net value is \$1.02. It's still significant and  
19                  higher than the ASHRAE numbers.

20                  I bring this up because many of the  
21                  requirements that we are proposing for the  
22                  nonresidential standards have already been shown  
23                  to be cost effective, and have gone through three  
24                  public reviews as part of the ASHRAE IES standards  
25                  process.

1                   And all of the assumptions that we're  
2                   making are the same as ASHRAE's except replacing  
3                   much greater value of energy savings, therefore  
4                   you can conclude that if ASHRAE showed them to be  
5                   cost effective, they're much much more than cost  
6                   effective in California arena. That's the point  
7                   to be made here.

8                   Next slide, please. Going to cover the  
9                   fenestration requirements. It's a major  
10                  contributor to cooling loads and peak demand. The  
11                  criteria has not been updated since '92.

12                  There's a number of special codings and  
13                  advanced technologies that are more available now.  
14                  We're also using the 30 year life cycle cost  
15                  analysis for fenestration, as opposed to the 15  
16                  year life cycle cost analysis that was used in  
17                  '92.

18                  We believe that the analysis is  
19                  conservative, and one of the reasons that it's  
20                  conservative is that it does not account for HVAC  
21                  equipment downsizing. Yet we're still able to  
22                  show quite stringent criteria.

23                  Another thing that we realized when we  
24                  started doing the criteria is that climate zones 2  
25                  and 10 really we felt belonged with the central

1 valley climates of 11, 12 and 13. So, we moved  
2 them in the criteria table from the north and  
3 south coast, respectively, into the central  
4 valley.

5 This changed the criteria for wall  
6 insulation and roof insulation very slightly. The  
7 wall insulation went from R-11 to R-13; and in  
8 climate zone 10 the roof insulation went from R-11  
9 to R-19. We showed that those criteria are very  
10 much cost effective as part of this.

11 There are a couple other things we did.  
12 We had vinyl frames as part of our analysis but  
13 when they showed up as a low life cycle cost  
14 choice we moved on to metal. Because we didn't  
15 think they would be applicable for the entire  
16 range of buildings that we're talking about here.

17 And then we also considered some median  
18 reflective coatings. These were considered for  
19 nonresidential buildings, but not residential.  
20 And there are a couple other minor changes.

21 Now, the criteria are listed in volume  
22 one. They're also in volume two and the  
23 underlines and strike-throughs standards.  
24 Basically we're looking at a U factor of .49 for  
25 most of California, except along the coast for

1 nonresidential buildings.

2 Next slide, please. And the .49 can be  
3 achieved with the thermal break frame and a  
4 sputter coating on double glass. For the north  
5 and south coasts, it's .81. That's basically  
6 double glass with a standard frame.

7 There's very significant changes to the  
8 SHGC criteria. There's still different criteria  
9 for north and not-north orientations, but you'll  
10 notice that we also have separate criteria now for  
11 different window wall ratio ranges. With larger  
12 window areas the criteria becomes more stringent.

13 Next slide, please. For skylights a  
14 similar approach was taken. We have three classes  
15 of skylights now, however. Glass skylights with a  
16 curve, without a curve, and the third class of  
17 plastic skylights. These classifications are  
18 consistent with ASHRAE 90.1.

19 And the SHGC criteria and U factor  
20 criteria shown here for res and nonres  
21 applications.

22 Next slide, please. There's another  
23 requirement that's included here, and this is a  
24 requirement for an NFRC label certificate for site  
25 built fenestration in buildings larger than

1       100,000 square feet.

2                   From the database we estimate that  
3       buildings larger than 100,000 square feet  
4       represent about 12 percent of permit applications,  
5       but almost 50 percent of new floor area. So, it's  
6       a pretty big chunk.

7                   And NFRC has a labeling and  
8       certification program for site built windows  
9       that's been tested in the State of Washington for  
10      some time, and we're recommending that this be  
11      applied here.

12                  Next slide, please. This requirement  
13      goes into section 116 of the standard. There's a  
14      couple of changes to the ACM approval manual, and  
15      these are mainly made to be consistent with  
16      changes in the standard, itself.

17                  Next slide. Okay. In terms of cool  
18      roofs, cool roofs are white-coated, or light-  
19      coated roofs. What we're recommending is an equal  
20      energy tradeoff credit. Cool roofs would not be  
21      the basis of the standard. They're not in a  
22      prescriptive criteria.

23                  However, the envelope tradeoff  
24      equations, section 143 of the standard, would be  
25      modified to include an absorptance term so that

1 credit can be offered for cool roofs.

2 And when the whole building performance  
3 method is used, then the cool roof could be traded  
4 off against just about any measure in the  
5 building.

6 We believe that this will provide a new  
7 design option at an incentive for cool roofs. The  
8 tradeoff procedure is based on a couple thousand  
9 DOE2 simulations that we did as part of this  
10 research.

11 Next slide, please. So the first change  
12 of the standard is in section 143 on cool roofs.  
13 And the equation that's used there for building  
14 envelope tradeoffs is modified to include the  
15 absorptance term. And there's a number of  
16 coefficients that have been added to support the  
17 equation.

18 The basic rules are that for the  
19 standard design the roof reflectivity would be  
20 assumed to be .3, which is the number that's been  
21 the default for some time.

22 And when a qualifying cool roof is  
23 installed, a roof reflectivity at .55 would be  
24 modeled.

25 Through this tradeoff procedure, going

1 to a cool roof is roughly the same as changing the  
2 SHGC and the windows by .1. That's the order of  
3 the tradeoff that we're talking about.

4 Next slide, please. We're hoping that  
5 the Cool Roof Rating Council will eventually  
6 assume a role similar to NFRC. And there's a new  
7 section 119.5 that requires, after January 1,  
8 2003, that cool roofs, in order to be eligible for  
9 this credit under title 24, have a rating from the  
10 Cool Roof Rating Council. Prior to that date,  
11 manufacturers' data on emissivity and absorb and  
12 reflectivity can be used.

13 The eligibility criteria for a cool  
14 roof, next slide, please -- there's really two  
15 classes of cool roofs. We have one class for  
16 concrete tile and clay tiles. And for those they  
17 require the solar reflectance and initial solar  
18 reflectance of .4 or greater.

19 Other roofs, which would be the majority  
20 of roofs in nonresidential buildings, would be  
21 required to have an additional reflectance of .7.

22 Now both roof classes are required to  
23 have a minimum thermal emittance of .75. This  
24 would essentially eliminate metallic finishes  
25 which might have a higher reflectance, but low



1 emissivity and thus would not perform acceptably.

2 Next slide, please. And to follow up on  
3 this theory, there are parallel changes in the ACM  
4 manual, picking up the .3 number, the .5 number  
5 and the ACM manual says model the emissivity at .9  
6 for both the basecase and for the standard and the  
7 proposed. That is the DOE.

8 Next slide, please. Now, for lighting  
9 the main thing here, there's been a couple of  
10 things to update the standards to provide  
11 consistency with ASHRAE 1999, I should say ASHRAE  
12 IES NA -- the Illuminating Engineering Society,  
13 who is a cosponsor of this standard. And also to  
14 close some loopholes that have been identified.

15 One of the changes is to require a  
16 minimum efficacy of 60 lumens per watt for  
17 exterior lighting, and this would apply only to  
18 lamps larger than 100 watts.

19 The effectiveness would be to discourage  
20 or disallow really, mercury vapor and tungsten  
21 lighting sources. Metal halide, high pressure  
22 sodium, and mini-fluorescent sources would still  
23 be permitted.

24 In terms of luminaire wattages, the  
25 ASHRAE IES standard had some rules on wattage

1       being used in screwed-in socket luminaries and  
2       others that have been adopted to provide a more  
3       consistent means to calculate luminaire wattage.

4               Next slide, please. There have also  
5       been some changes to the bilevel illumination and  
6       automatic shutoff control requirements. Some  
7       exceptions have been removed from the bilevel  
8       illumination requirement that makes it apply to  
9       more cases.

10              The threshold of 1 watt per square foot  
11       has been lowered to .8 watts per square foot. And  
12       the exception for automatic shutoff has been  
13       included.

14              So the second change is that automatic  
15       shutoff would be required for all buildings and  
16       spaces with lower lighting power levels.

17              In the interest of time I'll move on  
18       here. Next slide, please.

19              This is -- section 146 deals with  
20       portable lighting. And when the office building  
21       lighting power density numbers were adopted there  
22       was an assumption of portable lighting being  
23       included at the rate of about .2 watts per square  
24       foot.

25              And this change clarifies that, and

1 requires for compliance purposes that the  
2 compliance assume .2 watts per square foot for  
3 portable lighting when doing the calculations.

4 Next slide, please. There's also one  
5 last change which is sort of minor in a way, and  
6 this is to remove the lighting power credits for  
7 lumen -- there's a couple reasons for this.

8 One being with modern lamp technologies  
9 lumen depreciation is smaller than it used to be.  
10 And secondly, this technology is almost never  
11 used. So just to clean up the standards lumen  
12 maintenance would be removed as one of the  
13 lighting power credits.

14 Next slide, please. There were three  
15 lighting power numbers that were more stringent  
16 than ASHRAE than in title 24, and those three  
17 numbers have been adjusted to be consistent with  
18 the ASHRAE IES recommendations.

19 Next slide, please.

20 MR. HYDEMAN: I'm Mark Hydeman, Taylor  
21 Engineering, and I'll be covering the HVAC  
22 portions of the proposed requirements.

23 According to the schedule I'm already  
24 completed with my presentation, but for those of  
25 you that missed it the first time around, I'll

1       give you a summary review.

2               I'm also in the unique position of  
3       actually making my presentation after the comments  
4       were made on my presentation. And one  
5       clarification I'd like to make to the record, I  
6       acknowledge and accept ARI's praise on adopting  
7       the 90.1 equipment efficiency levels. But I'd  
8       like to make sure that everyone understands that  
9       the comment regarding some tables having more  
10      stringent efficiencies than 90.1 was a reference  
11      to page 65 that proposed appliance efficiency  
12      standards.

13             There was a hearing on that December  
14      7th, but not this document. This document is  
15      representing the 90.1 levels.

16             Having said that, we basically updated  
17      the equipment efficiencies. This is in table  
18      section 112, table 1C of the existing standard,  
19      updated the equipment efficiencies from the  
20      present title 24 1998 levels to the standard 90.1  
21      1999 levels.

22             We've also added some new classes of  
23      equipment which previously did not have any energy  
24      efficiency requirement under title 24. This  
25      includes absorption chillers, heat rejection

1 equipment, and a few other minor additions. We've  
2 got a slide that deals with this.

3 All of these efficiency levels were  
4 evaluated using the ASHRAE IES standard 90.1  
5 criteria which, as Charles pointed out in his  
6 presentation, was actually a much lower threshold  
7 in terms of cost. And the electricity was on the  
8 order of 64 cents per kilowatt hour for the  
9 lighting of the building versus the \$1.02 using  
10 the title 24 criteria.

11 So, it passed the ASHRAE criteria. It  
12 is more than cost effective using the title 24  
13 criteria.

14 A copy of the analysis that was done for  
15 ASHRAE is available on our website through  
16 February. We've made it available. And again a  
17 reference to that is in the write-up on volume  
18 one.

19 There are two columns of efficiencies  
20 with the tables. Let's go ahead and pop to the  
21 next slide, please.

22 It's hard for you to see this, but each  
23 of the efficiency tables will have two columns.  
24 The one on the left will be effective up to date  
25 of manufacture 10/29/2001. That is a title 24

1 existing title 24 1998 efficiency levels. And  
2 then after 10/29/2001, which is consistent with  
3 ASHRAE standard 90.1, the 90.1 levels pop into  
4 that.

5 This table just briefly shows some of  
6 the efficiency levels. I'll just read off one of  
7 them and that's centrifugal chillers, 150 ton to  
8 300 ton category going from 4.2 COP to about 5.6  
9 COP. So there's a fairly significant increase in  
10 efficiency.

11 Next slide, please. There's some new  
12 requirements that did not exist previously in  
13 title 24. One is a tradeoff method which is an  
14 equal energy tradeoff for centrifugal chillers  
15 that were designed to operate in conditions other  
16 than ARI 550.590 test conditions. And this is a  
17 method that was developed under standard 90.1 and  
18 is being proposed here for title 24, as well.

19 There are also new efficiency  
20 requirements for heat rejection equipment. This  
21 includes cooling towers, air cooled and  
22 evaporatively cooled condensers. And, again, that  
23 is a new requirement, does not exist in title 24.

24 Requirements for ground sourcing ground  
25 coupled heat pumps, and finally, for absorption

1 chillers.

2           Next slide, please. In addition for gas  
3 fired equipment or gas and fuel fired equipment,  
4 there are specific requirements. These are for  
5 forced air furnaces greater than 225,000 Btuh to  
6 prevent standby losses. And that includes power  
7 venting or flue damper. Floor vent damper is  
8 acceptable in lieu of a flue damper if the furnace  
9 draws air for conditioned space.

10           Basically intermittent ignition or  
11 interrupted device, something that gets rid of a  
12 pilot light, and jacket losses below .75 percent  
13 peak load rating when the furnace is not located  
14 in conditioned space.

15           The next section deals with air side  
16 economizers. Presently air side economizers are  
17 required on all units about 7.5 tons and above.  
18 We are not changing that threshold. However,  
19 we're creating a prescriptive, we're proposing a  
20 prescriptive tradeoff method for higher efficiency  
21 equipment.

22           We looked at what equal energy tradeoff  
23 loads of a fully functional economizer at each of  
24 the 16 California climates zones against a higher  
25 than standard efficiency, and we'll show the

1 results of that in a moment.

2 There are also high limit control  
3 switches and that's more advisory, at what point  
4 the economizer goes back to minimum position.

5 Next slide, please. Both of these are  
6 based on 90.1 requirements, but both of them were  
7 adopted specifically for the California climate  
8 zones.

9 This is a tradeoff table showing in the  
10 left-hand column the 16 California climate zones.  
11 Across the top, starting from the left, we have  
12 the largest size category of the air conditioners,  
13 package air conditioners, moving to the smallest  
14 on the right.

15 On the far right the ACER level's 10.3  
16 EER. There's no tradeoff available in climate  
17 zones 1 through 9 for that small category. But in  
18 climate zone 10 you can put in a 12.4 EER air  
19 conditioner, if you can find one, and waive the  
20 requirements for an air side economizer.

21 Basically anything that showed as  
22 requiring a 12.5 EER or above, -- above a 12.5 EER  
23 we basically said that at this point there's not  
24 equipment that could meet that efficiency  
25 requirement in a way that would be stable.



1                   Next slide, please. The high limit  
2 controls very hard to read. They're basically set  
3 points that are recommended by climate for  
4 different types of high limit switches. Fixed dry  
5 bulb depending on climate zone, you would either  
6 use a reference temperature of 75 degrees for the  
7 more mild climates or 70 degrees for a more  
8 aggressive climate.

9                   Differential dry bulb it's always  
10 looking at two temperatures, so there's no fixed  
11 set point. Fixed enthalpy controls are only  
12 allowed in the -- where extreme of the climates,  
13 some of the milder climates we disallowed fixed  
14 enthalpy controls. And again, this was based on  
15 the life cost analysis done in 90.1.

16                  Next slide, please. There are new  
17 requirements that are basically again wording from  
18 standard 90.1. They are meant to clarify existing  
19 requirements for duct and pipe insulation. And it  
20 is provisions to protect that insulation when the  
21 ducts or pipes are either located in unconditioned  
22 spaces or out in the elements.

23                  Next slide, please. There is a new  
24 proposed mandatory requirement for demand control  
25 ventilation. This is a requirement that would

1        impact basically all spaces that under the UBC  
2        represent occupant density of less than or equal  
3        to 10 square foot per person with outdoor air  
4        capacity, even if you were exceeding 3000 cfm.  
5        And this was based on a 90.1 requirement. We  
6        redid a life cycle cost analysis specifically  
7        using the 16 California climate zones. And it's  
8        supported by some advancements in the sensor  
9        technology and in controls industry in our region.  
10       And the fact that you can now buy packaged  
11       economizers that have together all the controls --  
12       CO2 reset.

13                Two few of the major manufacturers,  
14       CanFab and MicroMetal, are now offering this as a  
15       standard option. Their prices are quite small.  
16       Again, the information on the life cycle cost  
17       studies, you know, are in volume one.

18                Next slide, please. This is a table  
19       that shows basically again the 16 California  
20       climate zones as the rows. We ran analysis of a  
21       unit that was sized for 3000 cfm and outside air,  
22       100 percent outside air. And then again, running  
23       the same unit with a minimal position of 300 cfm,  
24       as it if had been reset to the title 24 allowed  
25       minimum of .15 cfm per square foot.

1                   And we calculated how often the space  
2                   had to be less than full occupancy, how many hours  
3                   it had to be less than full occupancy past the  
4                   life cycle cost criteria.

5                   We then ran that against two schedules,  
6                   title 24's nonres schedule and it passed in all 16  
7                   climate zones. And we also looked at the  
8                   auditorium threshold from -- we have a spreadsheet  
9                   that we can run virtually any schedule through.

10                  Next slide, please. Here's another  
11                  requirement that came straight out of 90.1 where  
12                  for heat rejection equipment this would include  
13                  cooling towers, air cooled and evaporatively  
14                  cooled condensers, does not apply to package  
15                  equipment covered by section 112 with the  
16                  exception of the cooling towers. But it requires  
17                  either a variable speed drive -- or two-speed  
18                  motor on a minimum of two-thirds of the fans  
19                  serving either a cooling tower, air cooled or  
20                  evaporatively cooled condenser.

21                  There's a very in-depth study that was  
22                  done by -- cosponsored by ASHRAE Technical  
23                  Committee 8.6, and ASHRAE IES Standing Project  
24                  Committee 90.1 for the 90.1 requirement  
25                  development. And we found that, in fact, using

1 the 90.1 costs, it was cost effective to set the  
2 threshold not at 7.5 horsepower, but down in 5  
3 horsepower for a two-speed motor.

4 But we did set the standard up a little  
5 bit just to give ourselves a bumper in 90.1 --  
6 with that here, that the threshold is set at 7.5  
7 horsepower.

8 Next slide, please. And that's one for  
9 Mark Modera.

10 MR. MODERA: Okay. Basically this is  
11 sort of quick. The changes that we proposed here  
12 are essentially to make it possible to use the  
13 same credit, this is not a requirement, but a  
14 credit as was done in 1998 with the residential  
15 standards, to allow you to use that on light  
16 commercial buildings.

17 And essentially the only buildings that  
18 we haven't applied it to is not all light  
19 commercial buildings, but ones with single zone  
20 unitary equipment serving less than 5000 square  
21 feet, with duct work located between the insulated  
22 ceiling and the roof, which is to say where the  
23 duct work is outside of the insulation of the  
24 building, or the ceiling insulation of the  
25 building.

1                   What this entails is the only changes to  
2           the standards are on a couple of compliance forms.  
3           And that changes to the ACM were essentially  
4           twofold. One was to take duct efficiency and  
5           incorporate it into the equipment efficiency  
6           calculations.

7                   In other words, DOE2 is used for  
8           compliance. What we did is we said we're just  
9           going to multiply, actually you divide, the energy  
10          use intensities for different equipment by the  
11          duct efficiency. That will give you essentially a  
12          new efficiency.

13                   And then the other change to the ACM was  
14          to copy over modified versions of the residential  
15          rules and procedures which, for those of you who  
16          were here this morning, we got rid of a number of  
17          the things that people didn't like, the sampling  
18          issues, those don't exist with this particular  
19          change.

20                   Okay, the compliance forms on the PERF-1  
21          form there's yes/no to verify duct ceilings, a  
22          simple one line. On the MEC-1 form there's one  
23          line change. And we created a new form called  
24          MEC-4, which looks like a combination of the  
25          residential forms that are used for compliance.

1           The key thing that we did here that I  
2           think is important to note is that we require  
3           third party verification. And the third party  
4           verification would actually be done by HERS  
5           raters. We couldn't think of another group that  
6           was out there who would have the experience.

7           And in choosing that the idea was that  
8           if the group already knows how to do this, and the  
9           worst that happens is people ignore it, right, and  
10          don't do it. Because if they're not comfortable  
11          finding a HERS rater to do this, they just won't  
12          do it.

13          The other thing is in the ACM rules.  
14          What we did is we assumed 22 percent duct leakage  
15          in the standard building, which is exactly the  
16          same as residential. And then in the proposed  
17          building you either get 22 percent, if you don't  
18          do anything. In other words, you don't choose  
19          this option. Or you get 8 percent -- this is  
20          again exactly the same as the residential. And to  
21          get the 8 percent you have to test to 6 percent,  
22          which was -- that's the same rule that we had in  
23          residential.

24          Next, please. This just outlines a few  
25          more of the ACM changes, which is basically that

1 the equipment energy intensities are divided by  
2 the duct efficiencies, which are calculated as  
3 separate heating and cooling numbers. Using the  
4 same thing again from '98 standards.

5 There's a new chapter 7 that parallels  
6 the residential HERS chapter. Again, without  
7 sampling in this case. A new appendix G that  
8 again parallels the residential appendix F.

9 And then finally there's an appendix H  
10 that gives sample calculations, again like  
11 residential appendix J.

12 Next. Okay, the only point of this,  
13 which you can't see it very well, is you see  
14 there's a whole bunch of bars for a lot of climate  
15 zones. And the little bars are what we're giving  
16 credit for. And the big bars are what you're  
17 probably really getting.

18 Which is to say, this was done very  
19 conservatively. All the field data from LBL and  
20 from Florida Solar Energy Center basically said  
21 that light commercial ducts actually leak  
22 significantly more than residential. But we're  
23 assuming the same as residential levels, and  
24 therefore we wound up with conservative  
25 assumptions.

1                   Next, please. That was heating. This  
2                   is cooling. Same drill except cooling obviously  
3                   is much more sensitive to climate.

4                   Next. And finally there's one other  
5                   thing, and this is a change that we'll bring up in  
6                   the next round of standards, is that the basis for  
7                   all the calculations in the CEC program is an old  
8                   version of ASHRAE standard 152. And the problem  
9                   is that in many of the California climates you  
10                  wind up underestimating the savings that you  
11                  achieve because of the weather that's assumed for  
12                  the seasonal conditions.

13                  And that's all I have to say.

14                  MS. SHAPIRO: Are we ready, then?

15                  PRESIDING MEMBER PERNELL: Lights,  
16                  please.

17                  MR. PENNINGTON: Yeah, ready for other  
18                  comments and questions.

19                  PRESIDING MEMBER PERNELL: Yes. Okay,  
20                  we're now ready for public comment and questions.

21                  MS. SHAPIRO: Any questions first of  
22                  these presentations before I start calling on you?  
23                  Good -- oh, no, we've got somebody with a  
24                  question. Go. Ask your question.

25                  MR. FARBER: Gary Farber with CABEC.



1 Two questions. One on the portable lighting  
2 issue. Is that going to apply to tailored and to  
3 complete building method, or only to area?

4 MR. ELEY: This applies on the  
5 compliance side, not -- this is not where you  
6 determine your allowance, but when you're  
7 determining compliance with whatever he allowance  
8 is.

9 So, yes, it would apply to both.

10 MR. FARBER: Okay, great. And on the  
11 ducts for credit, that's any ducts outside the  
12 envelope? I think I saw a slide that said if it  
13 was between the ceiling and the roof, but it meant  
14 really anything outside the insulated envelope?

15 MR. MODERA: Actually the way it's  
16 written is only between the ceiling and the roof.  
17 Between the insulation and the roof. And so  
18 you've got insulation on the ceiling.

19 If you go to buildings, about 50 percent  
20 of the time you'll find that buildings have their  
21 insulation on the ceiling tiles rather than on the  
22 roof deck. And it only applied if the ducts are  
23 outside of that insulation.

24 It is not worded, and if people actually  
25 put ducts on the roof of the building, the way

1       it's worded it is not -- you can't get a credit  
2       for that, for sealing those ducts.

3               Now, --

4               MR. FARBER: Intuitively it seems like  
5       we have even more to gain by going to the protocol  
6       on outdoor ducts.

7               MR. MODERA: That's a possibility. That  
8       would not be -- I don't think that would be a very  
9       problematic change. I don't know --

10              MR. ELEY: Well, we've tried to do an  
11       awful lot of work in six weeks, and this is all we  
12       felt we could do reasonably, is try and deal --  
13       the configuration of ducts in nonresidential  
14       buildings is so varied. And we're really only  
15       trying to deal with that class of nonresidential  
16       buildings that are really built like homes.

17              MR. FARBER: Where there's an attic  
18       space?

19              MR. ELEY: Yeah.

20              MR. FARBER: Right.

21              MR. ELEY: And so that's really all  
22       we're trying to deal with here now. And then when  
23       we have time to breathe and look at it the next  
24       round, I think we will take a more serious look at  
25       it.

1                   And I know PG&E has been doing some  
2                   research in this area that will help guide us.

3                   MR. PENNINGTON: It looks like --

4                   MS. SHAPIRO: Gary, don't move because  
5                   you're going to be next to make your comments.

6                   MR. PENNINGTON: It looks like there are  
7                   major savings in improving duct systems in  
8                   commercial buildings, and we're trying to take a  
9                   little step here. But it looks huge.

10                  MR. MODERA: LBL actually has a research  
11                  project, a PIER project to work on that very item.  
12                  And this was -- none of the work being done there  
13                  is reflected here. This was just plain okay,  
14                  what's the simplest thing we get in in this  
15                  timeframe that should be noncontroversial. And  
16                  that's where we'll end it.

17                  MS. SHAPIRO: Tom, you have a question?  
18                  Does it relate to this?

19                  MR. TRIMBERGER: Yes.

20                  MS. SHAPIRO: Go.

21                  MR. TRIMBERGER: I'm Tom Trimberger  
22                  representing CALBO. A question in field testing  
23                  would be required when in an ACM, they've checked  
24                  yes, and then the lower values would be used, and  
25                  that's the only time.

1                   PRESIDING MEMBER PERNELL:   Okay, we'll  
2                   start the --

3                   MS. SHAPIRO:   Gary, as soon as you  
4                   finish writing, then if you will start talking.

5                   MR. FARBER:   Okay.   Thank you.   I  
6                   understand the extreme time pressures that staff  
7                   and the consultants have been under.   And so I  
8                   guess my comments should be taken in that context.  
9                   And I'm going to try to be brief and CABEC,  
10                  California Association of Building Energy  
11                  Consultants will be forwarding a letter within the  
12                  next 24 to 48 hours to elaborate on some of the  
13                  points they want to make.

14                  First one, on skylight requirements.  
15                  The proposal calls for skylight requirements to  
16                  vary as to the type of glazing and as to whether  
17                  they have curves or don't have curves.   And we'd  
18                  like to see consideration of just simplifying that  
19                  to the worst case assumptions, so whichever are  
20                  the most stringent, as long as that's cost  
21                  effective.

22                  We see real problems with having a  
23                  standard that varies based on the type of glazing,  
24                  or whether there's curves or not curves.   That  
25                  information often is not known at the time that

1 energy consultants are doing the analysis of the  
2 building.

3 And any changes in the field would be  
4 very difficult to work with because not only is  
5 the product changing, but the requirement that  
6 they're trying to meet is changing at the same  
7 time.

8 Second issue is high rise fenestration.  
9 This is a little ironic that I would bring up an  
10 issue with that because I'm very gratified to see  
11 that high rise residential, in the coastal zones,  
12 is being proposed to go dual pane, which I've been  
13 talking about for a long time.

14 And I was a little surprised to see that  
15 the solar heat gain coefficients are very low in  
16 the coastal zones in the high rise residential.  
17 And the point of reference in the low rise  
18 residential standards there's no heat gain  
19 requirement at all on glass.

20 CABEC, I guess, would like to see a  
21 little bit more analysis on that, and see whether  
22 there might be some aberration that's causing  
23 that, maybe based on internal heat gain, or some  
24 other factors.

25 We'd also like to see consideration

1 possibly of a dual standard where any high rise  
2 residential projects that are constructed without  
3 cooling would have a different requirement than  
4 those that are installed with cooling.

5 This would be something different than  
6 has happened historically with the standards.  
7 But, the idea of cooling being retrofitted at some  
8 future date on high residentials is a much  
9 different prospect than on a single family home.

10 On the NFRC ratings for glazing, we'd  
11 like to see consideration of that being based on  
12 glass area rather than building area, since the  
13 economics seem to support doing that when the  
14 glazing area is beyond a certain area, and not all  
15 buildings have similar glass areas per floor area.  
16 So, it's something that we'd like to see  
17 considered.

18 This is very question -- on load  
19 calculations. Well, first of all, on load  
20 calculations we would like to see consideration of  
21 the load calculations being a requirement under  
22 performance compliance approach as they currently  
23 are under prescriptive compliance approach.  
24 Something that Martyn Dodd suggested at the last  
25 workshop, and we support.

1                   We'd like to see consideration of the  
2           ASHRAE design rules of being modified. Currently  
3           I believe title 24 just indicates that the ASHRAE  
4           methodologies for load calculations are to be  
5           followed. Unfortunately, those will allow a wide  
6           range of duct efficiencies and interior  
7           temperatures and I think maybe that could be  
8           looked at.

9                   For instance, maybe interior temperature  
10          for cooling could be set at 72 or 74 rather than  
11          70 degrees as a minimum.

12                  The duct requirements for tight ducts,  
13          rather than basing that on the I believe it's 5000  
14          square feet, we'd like to see that based on  
15          equipment size. We think it would be a lot  
16          simpler from an enforcement standpoint where the  
17          enforcement agencies do know that if a system is,  
18          you know, a certain tonnage, then it has to meet  
19          that protocol as opposed to being a square footage  
20          requirement.

21                  Okay, one thing that we've noticed for  
22          an awfully long time on high rise residential  
23          multifamily, as well as low rise residential, is  
24          we see a lot of electric resistance heating, space  
25          heating being constructed.

1                   And most often these buildings pass  
2           because of a tradeoff with domestic hot water  
3           heating that is due to an aberration of the way  
4           the credits are given for central domestic hot  
5           water heating. And I think staff would agree that  
6           the current methodology for calculating the  
7           efficiency of central hot water heating needs some  
8           correction.

9                   And we know there's not staff time to  
10          do, you know, come up with new algorithms, but we  
11          think there are possibilities of very simple fixes  
12          that would not take staff time in terms of  
13          analysis.

14                  Two examples that could fix this: One  
15          is any building that has a central system would be  
16          modeled against the standard budget based also on  
17          a single system. Another one is simply to say any  
18          project of a certain number of units, say greater  
19          than 10 unit building, the domestic hot water  
20          budget just cannot be traded off against the space  
21          heating and space cooling. It would be a pretty  
22          simple fix for that requirement.

23                  One last issue is there are proposed new  
24          requirements for outdoor lighting which we fully  
25          support. We'd like to see the requirements



1 strengthened that outdoor lighting be regulated by  
2 photocell controllers.

3 I'm constantly noticing outdoor lighting  
4 in parking lots and big shopping centers that's on  
5 all day long. And when I query the operators they  
6 tell me, well, it's on a time clock. And  
7 evidently these time clocks are, you know, having  
8 a lot of mechanical difficulties. So I think  
9 requiring photocell on all outdoor lighting would  
10 be an easy fix.

11 MS. SHAPIRO: David, did you want to  
12 talk more on nonres?

13 MR. PENNINGTON: I'm wondering if our  
14 contractors would want to respond to Mr. Farber at  
15 all.

16 MS. SHAPIRO: Oh, sorry. Do you want to  
17 wait until --

18 MR. PENNINGTON: Do you want to respond  
19 to --

20 MS. SHAPIRO: -- you've got their  
21 written comments?

22 MR. PENNINGTON: I was curious about the  
23 skylights comment in particular, the curves and,  
24 you know, that comment.

25 MR. ELEY: The reason that we're

1 publishing separate criteria for skylights with  
2 and without curves is we want to encourage the use  
3 of NFRC labels for skylights.

4 And if a skylight is intended to be  
5 mounted on a curve it's NFRC U value includes the  
6 curve. So, we have to present the criteria this  
7 way in order to be consistent with the way NFRC  
8 rates skylights. And that's the main reason.

9 MR. PENNINGTON: And the rating is  
10 substantially different.

11 MR. ELEY: They're quite different,  
12 yeah. We're talking about 60 percent increase in  
13 U factor with the curves added for the savings --

14 MR. PENNINGTON: So choosing one or the  
15 other seems like, you know, you would be very  
16 wrong for the opposite case.

17 MS. SHAPIRO: Why don't you guys talk  
18 about this after. Mr. Goldstein.

19 PRESIDING MEMBER PERNELL: Well, wait a  
20 minute, wait a minute. This is an issue that  
21 needs some resolve. Are you satisfied with the  
22 answer?

23 MR. FARBER: Well, I think one issue is  
24 how often are we going to see non-curved skylights  
25 in the nonresidential buildings. If it's a very

1 small number it's probably not worth having the  
2 complication of having the two numbers.

3 MR. ELEY: Well, all atriums will be  
4 noncurved skylights. And I think you'd be  
5 surprised, I guess this is not conditioned space  
6 out here, but this one is not curved --

7 PRESIDING MEMBER PERNELL: This is not a  
8 good example, either.

9 (Laughter.)

10 MR. FARBER: Right, right.

11 MR. ELEY: I think there will be a lot  
12 of -- the plastic skylights are always assumed to  
13 be on a curve. It's only the glass skylights  
14 where there's the curve/no curve distinction.

15 MR. FARBER: Well, frankly, we again are  
16 more concerned about the discrepancy between the  
17 glass and the plastic requirements. We certainly  
18 understand if they have different values, and that  
19 should be incorporated on the design side.

20 But it comes to what the requirement for  
21 the standard side is that we'd like to see just a  
22 simple standard and not have a dual standard.

23 We want to have a situation where if we  
24 calculate one system and someone comes in the  
25 field with another one, as long as it meets the

1 same thermal performance that would be acceptable  
2 without having to recalculate the building.

3 PRESIDING MEMBER PERNELL: Okay. We  
4 will take your comments under advisement.

5 MS. SHAPIRO: David.

6 DR. GOLDSTEIN: Thank you, Rosella, and  
7 Commissioner Pernell. I can be very brief here  
8 because we think the staff has done an excellent  
9 job of analysis, particularly given the timeframe  
10 of the staff and the contractors.

11 Actually I failed to say that about the  
12 residential side, for which it is equally true. I  
13 think it's a very solid analysis that's been  
14 created on this rush schedule.

15 We're disappointed that we couldn't find  
16 more energy savings, but frankly, I wouldn't know  
17 how to do it within the timeframe, either.

18 So, I particularly want to commend the  
19 work that was done on fenestration. Adopting  
20 things where ASHRAE is more stringent than title  
21 24 should be a no-brainer because their consensus  
22 process doesn't have any rules in the sense that  
23 here if something is cost effective, if you can do  
24 it, if it doesn't have sufficiently adverse  
25 impacts on industry, then it has to be included in

1       the standard.

2                   In the ASHRAE proceeding you have to get  
3       agreement. And if someone just doesn't want to do  
4       it for whatever reason, it doesn't get in there.  
5       So the fact that something got in, the fact that  
6       there are very weak cost effectiveness thresholds  
7       were met should mean that there's no reason you  
8       should even think twice about doing this in  
9       California.

10                  For fenestration, fortunately the  
11       analysis was capable of being redone to suit  
12       California's specific conditions in terms of  
13       energy costs and climate and the lifetime discount  
14       rate assumptions that the Commission has been  
15       doing.

16                  And so you get something that's really a  
17       big step forward in terms of encouraging  
18       fenestration systems that are going to save peak  
19       power and be cost effective to the user. So  
20       that's a particularly good section of the  
21       proposal.

22                  I'll just close by suggesting that  
23       suggestions to close up loopholes such as you  
24       heard from Mr. Farber be considered even at this  
25       late date.

1 Thank you.

2 MS. SHAPIRO: Thank you.

3 PRESIDING MEMBER PERNELL: Thank you,  
4 David.

5 MS. SHAPIRO: John Hogan.

6 MR. HOGAN: Good afternoon, my name is  
7 John Hogan with the City of Seattle, Department of  
8 Design, Construction and Land Use. That's  
9 Seattle's Building Department.

10 I worked writing and enforcing energy  
11 codes since the late 1970s in Seattle. I've also  
12 represented the code officials perspective on the  
13 ASHRAE IES NA Standard 90.1 Committee and also on  
14 the NFRC Board of Directors. And I offer my  
15 comments based on those perspectives.

16 First of all, I'd like to say that we  
17 generally support the recommendations for the  
18 nonresidential standards, the draft provisions.

19 I've got about a half dozen comments to  
20 make on the envelope section, a few mechanical and  
21 a lighting comment.

22 The envelope section, we strongly  
23 support the NFRC certification for all  
24 fenestration systems, including the site  
25 constructed products as indicated in section 111A.

1       This is currently a requirement in the Washington  
2       State Energy Code. We've been enforcing this in  
3       Seattle.

4               I think there's a good summary of the  
5       process in the supporting materials provided by  
6       Eley Associates, but just to talk about that  
7       particular aspect of it: The way the process  
8       works now if you have a small house and you want  
9       NFRC certification, basically the plans examiner,  
10      the building inspector, nobody really sees  
11      anything until they go out to the house and they  
12      look at the label. And there's the label and you  
13      have that performance information.

14             Essentially it works the same way on the  
15      nonresidential side, or with the site constructed  
16      products because you have a permit that's issued,  
17      a bid gets awarded, and then the glazing  
18      contractor is usually responsible party.

19             And while they're doing demolition, you  
20      know, excavation, foundation, structural steel,  
21      all those portions of it, that's when the glazing  
22      contractor is going through the steps to get the  
23      simulation and to get the rating and the label  
24      certificate.

25             And so it's something that seems to fit

1 in well with the process. And, again, the notion  
2 of having this labeled value at the end, where  
3 there's something the inspector can look at, makes  
4 it a lot easier for our work. We've got some firm  
5 documentation to go by. It's third party, we can  
6 trust the information.

7 The certification that's specified is  
8 for a U factor and for solar heat gain  
9 coefficient.

10 As a second point, we would like to  
11 recommend that you require this NFRC certification  
12 for visible light transmittance where that is used  
13 and code compliance hinges on that.

14 So, for example, there are some  
15 daylighting control credits in the lighting  
16 section which are based on the daylight  
17 transmittance. But nowhere does it specify how  
18 you get that visible transmittance, or that you  
19 have to document that.

20 So, we would recommend, for instance,  
21 that table 1-L in section 146, that the rating  
22 procedure be specified so that we have consistency  
23 of implementation, and that the visible  
24 transmittance then be labeled again so it's easy  
25 for the inspectors to verify compliance.



1                   It's easy to do. That's a standard part  
2                   of the NFRC label. So it would be an easy thing  
3                   to add on.

4                   Another section in the envelope material  
5                   section 116(a)(2) allows the use of the ASHRAE  
6                   handbook to fault U factors for nonresidential  
7                   buildings that are less than 100,000 square feet.  
8                   So where the site built label wouldn't necessarily  
9                   be required.

10                  This will discourage people from getting  
11                  the NFRC ratings because those ASHRAE values are,  
12                  well, they're just not values that are going to  
13                  encourage people to get the ratings.

14                  We would recommend that you set a sunset  
15                  date on that. And maybe, I'm not sure when the  
16                  next version of the standards is going to be,  
17                  whether that's going to be 2004 or 2005, but you  
18                  put a sunset date in there now so that the  
19                  manufacturers have some heads-up and lead time so  
20                  they can start to do preparation to get their  
21                  ratings, and not get surprised by it in some  
22                  future code cycle.

23                  Moving on to the envelope criteria,  
24                  section 143, tables 1-I and 1-H have the  
25                  fenestration criteria. We also support that

1 criteria and believe that it's reasonable.

2 One of the wonderful features about the  
3 NFRC program is it allows a cheap way for  
4 manufacturers to learn about the performance of  
5 their products, and to evaluate product variations  
6 without investing in costly mock-ups and things  
7 like that.

8 What we've seen in Seattle enforcing the  
9 NFRC program is that manufacturers have learned  
10 from that. They've made some changes in products  
11 which are not, you know, major changes, but are  
12 smaller things which yield thermal improvements.

13 And the results are better products.  
14 And what we've seen, the levels that are specified  
15 can be achieved with the low E glass. We've seen  
16 U factors for metal curtain wall systems with low  
17 E glass in commercial buildings as low at .38.  
18 And this is for metal frames without going to a  
19 full thermal break. So there's some thermal  
20 improvement, but not the full thermal break. And  
21 that's much less costly doing the thermal  
22 improvement.

23 Another point here in the envelope  
24 section. We would like to recommend that the  
25 baseline visible light transmittance criteria be

1       established also for the energy budget approach.  
2       So in the course of setting the prescriptive  
3       criteria certain glass assemblies were evaluated.

4               The ones which I think came out best had  
5       good daylight transmittance. We want to make sure  
6       this is not a loophole when people go to the  
7       energy budgets, that they don't assume a bronze or  
8       bad glass with poor daylighting performance, and  
9       then start to take credit for better daylighting  
10      performance. This would just provide simple  
11      consistency. ASHRAE standard 90.1 has done this  
12      in their appendix C, table C-3.5. So that's an  
13      example.

14             And the last point on the building  
15      envelope refers to replacement windows. I was  
16      here earlier when Garrett Stone talked about and  
17      recommended that the residential U factor and SHGC  
18      requirements applied to replacement windows.

19             I would concur with that, and I would  
20      also recommend the same for nonresidential  
21      windows. This has been a requirement in the  
22      Washington State Energy Code for 20 years, since  
23      1980. It hasn't been a big deal, we haven't had a  
24      lot of questions.

25             The issues that the gentleman brought up

1 earlier about having problems with egress windows  
2 changing just hasn't come up. And I think as  
3 people who know about the Northwest, we've had a  
4 lot of aluminum windows because we've had cheap  
5 electricity. They were changed to vinyl windows.  
6 And so we haven't seen a problem with that.

7 So, if it's not possible to be done in  
8 this cycle, we encourage the Commission to look at  
9 that for the next cycle.

10 A couple quick things on mechanical. We  
11 supported option of the mechanical equipment  
12 efficiencies from ASHRAE 90.1. For short-term  
13 emergency rulemaking this may be the best  
14 approach. The NAECA issues you heard talked about  
15 earlier address mostly smaller equipment. This is  
16 larger equipment going into these buildings.

17 We strongly encourage the Commission to  
18 look at higher equipment efficiencies for this  
19 larger equipment for the next cycle.

20 Second mechanical point, we're  
21 disappointed the Commission did not include  
22 completion and commissioning requirements in the  
23 proposal, such as those from ASHRAE standard 90.1.

24 Seattle has been enforcing those for  
25 building mechanical systems and automatic lighting

1 control since 1998, and these requirements have  
2 been adopted statewide in the Washington State  
3 Energy Code.

4 For lighting we would also recommend  
5 that the lighting control credits in section 146,  
6 table 1-L be deleted. This is something that was  
7 deleted from IES standard 90.1 in the 1999  
8 version, deleted from the Washington State Energy  
9 Code in 1997.

10 And the last editorial point, there are  
11 some references to ASHRAE handbooks 1993, 1995 in  
12 half a dozen places throughout the document. Those  
13 should be updated to the current versions.

14 Thank you.

15 MS. SHAPIRO: Thank you, John.

16 PRESIDING MEMBER PERNELL: Okay, thank  
17 you.

18 MS. SHAPIRO: Bob Wisbey.

19 MR. WISBEY: Wisbey.

20 MS. SHAPIRO: Wisbey. Oh, Wisbey.

21 MR. WISBEY: Bob Wisbey. I'm here  
22 speaking for the National Electrical Manufacturers  
23 Association, NEMA.

24 And I really just want to talk about the  
25 lighting portion, all the lighting provisions

1       involve products manufactured by NEMA members.

2               Most of the provisions that are in the  
3       proposal have been written consistently with  
4       ASHRAE IES NA 1990.1, 1999, which is what we think  
5       they should have been.

6               Most of them are consistent with input  
7       that we've provided in written comments over the  
8       past two months. So, in principle, we support the  
9       lighting provisions of this draft standard.

10              We've got a couple minor questions  
11       regarding the cost analysis of bilevel lighting.  
12       The provisions for bilevel lighting and provisions  
13       for removing some exceptions. In paragraph 131B  
14       for bilevel lighting where we don't have any real  
15       problem with what's done, but we question whether  
16       removing the exceptions is really the best way to  
17       save the maximum amount of energy.

18              The bilevel lighting analysis that's in  
19       there makes the assumption that all bilevel is  
20       going to be done by switching fixtures, complete  
21       fixtures on and off. Someone wants to do a  
22       reasonable lighting job with the reduced lighting  
23       levels, they're going to need to leave some of the  
24       lights on in each fixture, or leave all of the  
25       lights on in a fixture at a reduced level. And

1       that's going to cost more.

2               So, we would suggest, and we don't have  
3       a specific major point on this, we would suggest  
4       that the staff and the contractors re-look at that  
5       provision again and question whether the  
6       exceptions from 131B should really be removed or  
7       not.

8               But, you know, it's the basic philosophy  
9       of NEMA and of our manufacturers that the best way  
10      to save lighting energy is to use a good,  
11      efficient discharge lamp system. Not to worry too  
12      much about the differences in efficiency between  
13      the different efficient systems. And then save  
14      energy by turning off lights when they're not  
15      needed, reducing light levels when the full light  
16      levels are not needed.

17              We think that this proposal does a very  
18      good job of accomplishing that, and in principle  
19      we support all of the proposals in here.

20              A separate issue: We want to also  
21      provide support to comments that were made earlier  
22      today by ARI and GAMA on federal preemption of  
23      products that are covered by NAECA and EPACT.  
24      Many of our products are covered by those, and we  
25      think that the federal preemption in those product

1 areas is something that is very important.

2 And that if exemptions are sought that  
3 should be done very thoughtfully and very  
4 carefully. That does not have any immediate  
5 impact on NEMA or any of NEMA's products because  
6 there's nothing in these proposals that would  
7 affect our products. But we do support the  
8 comments that ARI and GAMA made in that regard.

9 Thank you.

10 MS. SHAPIRO: Nehemiah, you're on  
11 lighting, also?

12 MR. STONE: Nehemiah Stone, Heschong  
13 Mahone Group.

14 Lighting and fenestration. I'd like to  
15 go to some of the fenestration stuff first. I had  
16 a chance to see the report that PG&E gave to Eley  
17 and Associates before this set of standards was  
18 put together.

19 If I'm not mistaken there were a couple  
20 elements in it that didn't get moved over that  
21 make a big difference. And I'd like to recommend  
22 that those things that got dropped out be  
23 included.

24 Specifically in the exceptions to  
25 10.111A, 10.111B, and 116(a)(2) it currently says



1       glazed walls, the exception to meeting the NFRC  
2       rating certification is glazed wall systems in  
3       buildings under 100,000 square feet and overhead  
4       glazing in buildings covered by the nonresidential  
5       standards.

6                   And I believe it should say site built  
7       glazed wall systems in buildings under 100,000  
8       square feet. Because the intent was not to  
9       provide an exemption for manufactured fenestration  
10      products, which are simply going in punched  
11      openings, which could be interpreted here, if the  
12      words site built were not in there.

13                   And another suggestion that was made, I  
14      believe too late to be included in the PG&E  
15      report, but which I talked to Charles about, was  
16      changing in buildings under 100,000 square feet to  
17      in buildings with less than 100,000 square feet of  
18      conditioned floor space. So that there's not a  
19      confusion between the size of the building versus  
20      how much of it is conditioned floor space.

21                   And on that note I'd also like to  
22      respond to Gary Farber's suggestion to use glazed  
23      area rather than building area, and I think it's  
24      an inappropriate way to go. Partly because we  
25      have reasonably good data on how many buildings

1 we're going to capture at 100,000 square feet. We  
2 don't know if we just say some glazed area.

3 But also because during the permits and  
4 construction process it is much more likely that  
5 the design will change in the amount of glazing  
6 that it's going to have than it will change in the  
7 amount of square feet in the building.

8 And if it changes at that point and  
9 throws somebody all of a sudden into or out of  
10 this requirement, that can cause havoc. And so  
11 going with 100,000 square feet is a much more  
12 secure way of dealing with it.

13 And I'd also like to respond to John  
14 Hogan's recommendation for lower U factors. And  
15 it's something that if I didn't say it, Charles  
16 probably would say it. And that is that we didn't  
17 have new incremental costs for the glazing, and  
18 the ones that were used were very conservative.  
19 And we recognize that. And John Hogan's right.  
20 Certainly a much lower level of U factor could be  
21 justified if we had new data. We need more time  
22 to do that. We tried to get the industry to  
23 respond, and I actually only got three responses  
24 from the industry. But with more time we could  
25 get better data on what the incremental cost is

1       and justify lower U factors and perhaps even lower  
2       SHGCs.

3               Turning then to lighting. This is  
4       something I've discussed with staff, also. It's a  
5       minor point and I'm probably advised to just drop  
6       it, but that's not my nature.

7               On -- I don't know what page it is, but  
8       on the lighting wattage exempted from being  
9       counted in the LPD, exemption K currently says,  
10      lighting that is required for exit signs subject  
11      to section 1013 of the UBC, if it has an efficacy  
12      of at least 40 lumens per watt and has a power  
13      factor greater than 90 percent.

14              The errata offered this morning adds  
15      language to that which also says, or if the exit  
16      sign is less than, I believe it's 13 watts.

17              That came about because part of the exit  
18      sign report that PG&E provided to the Commission  
19      for the appliance standards made the  
20      recommendation to simply strike everything after  
21      UBC in that, because it's unnecessary once the  
22      appliance standards are adopted.

23              Because this, as it's written, favors  
24      exit signs with CFLs; in fact, it favors  
25      inefficient exit signs with CFLs. And it's not

1       necessary. If there's concern about the appliance  
2       standards proposal may not be adopted, and this  
3       might offer some way in for incandescent lamps, I  
4       would offer a few arguments to that.

5               One is I seriously doubt that any  
6       developers are going to be making decisions about  
7       which exit sign to buy based on whether or not  
8       they have to count the wattage of the exit signs  
9       in their LPD.

10              Secondly, it could be handled much  
11       easier simply by saying if it has an input power  
12       rating of 5 watts per face or less.

13              The reason I offered striking all this  
14       in the first place is because it's unnecessary,  
15       it's confusing and it would be helpful in  
16       enforcement to make this all simpler. Adding the  
17       additional language that's in the errata simply  
18       makes it more complex and it's unnecessary.

19              PRESIDING MEMBER PERNELL: Okay.

20              MS. SHAPIRO: Thank you, Nehemiah.

21              MR. PENNINGTON: We firmly disagree with  
22       the last point he made, but otherwise good  
23       comments.

24              PRESIDING MEMBER PERNELL: Well, you  
25       guys can talk about it on a sidebar. We got to

1 push this a little bit --

2 MR. STONE: Oh, we have already, and I  
3 give up.

4 (Laughter.)

5 MS. SHAPIRO: All right, come on, Bob,  
6 quick.

7 MR. WISBEY: Bob Wisbey again. I just  
8 would -- hadn't heard it before, but I would  
9 support what Nehemiah just said, that the simplest  
10 way to handle that exception is to simply say  
11 anything that has five watts per face or less is  
12 exempt. And not go into all the other complex  
13 wording and so forth. I would agree with that.

14 PRESIDING MEMBER PERNELL: Okay.

15 MS. SHAPIRO: Thank you so much.  
16 Patrick Eilert from PG&E.

17 MR. EILERT: Thank you, again. I just  
18 wanted to say that PG&E will be submitting a  
19 letter urging the Commissioners to adopt the  
20 standards as they're written.

21 We think they're very solid, and we  
22 wouldn't want to see any backing off of the  
23 stringency that's been presented today.

24 Thank you.

25 PRESIDING MEMBER PERNELL: Thank you.

1 MS. SHAPIRO: Mr. Hunt, did you have  
2 anything other than that to say?

3 MR. HUNT: Yes.

4 MS. SHAPIRO: Oh.

5 (Laughter.)

6 MR. HUNT: Real quick. Marshall Hunt,  
7 PG&E.

8 We realize that the site built  
9 certification or labeling with NFRC will be a  
10 change, a market transformation after it. We're  
11 dedicated in our planning to implement this early  
12 next year. So, as soon as we know it's there,  
13 we'd like to see it more widely used, and even at  
14 the 100,000 square foot level.

15 And having a sunset date that John  
16 mentioned, I hadn't thought of that, but that  
17 would actually be a good way to let everybody know  
18 that it's coming.

19 And particularly we want to make sure  
20 that a lot of buildings don't necessarily need  
21 this, they may be very large. But they may use  
22 punch-out holes and have premanufactured units  
23 that could be rated by the manufacturer under  
24 existing levels.

25 So, again that wording is very critical.

1       It's minor differences, but we definitely support  
2       moving as quickly as possible to complete labeling  
3       of all fenestration products in the building.

4               Thank you.

5               PRESIDING MEMBER PERNELL: Thank you.

6               MR. PENNINGTON: Could I just comment on  
7       that just real briefly.

8               It's not clear for smaller buildings  
9       where the threshold would be for what's cost  
10      effective and what's not cost effective related to  
11      NFRC labeling certificates.

12              And it probably is a fairly complex  
13      question to try to address. And I'm a little  
14      uncomfortable with the idea that we would put a  
15      sunset on a default table on the expectation that  
16      in the future we'll figure this out and we'll be  
17      okay.

18              That makes me nervous. I think that's  
19      going a little far.

20              PRESIDING MEMBER PERNELL: Okay.

21              MS. SHAPIRO: Randall Higa from  
22      SoCalGas. And Mr. Ahmed, is he going to come  
23      speak at the same time as you?

24              MR. HIGA: Hi, Randall Higa, Southern  
25      California Gas Company.

1                   Thank you, Commissioner Pernell, for  
2                   allowing us to speak today. We had some comments  
3                   and questions on primarily two items. First, the  
4                   HVAC efficiency tables, and also on the cool  
5                   roofs.

6                   First, on the HVAC equipment tables, the  
7                   first question is in terms of the implementation  
8                   date. From what I understand we're going to be  
9                   sticking with the October 21st date for that  
10                  second column, the right-hand column?

11                 MR. ELEY: October 29th.

12                 MR. HIGA: October 29th, okay.

13                 MR. ELEY: This is a negotiated date  
14                 with all the manufacturers. We don't want to  
15                 touch it.

16                 MR. HIGA: Okay, so does that mean that  
17                 if an applicant goes into the building department  
18                 prior to that date, in their compliance report  
19                 they would be using the 1998 efficiencies, and  
20                 then after that it's the updated one?

21                 MR. PENNINGTON: No, that's not what --

22                 MR. HYDEMAN: If I can, there's a --  
23                 ASHRAE issued a clarification on this. There was  
24                 an official request for interpretation. It's date  
25                 of manufacture of the equipment.



1                   So, if, in fact, something is  
2           manufactured before 10/29/2001 and it's installed  
3           after, it only has to comply with the first  
4           column, which is the existing title 24 1998  
5           requirements.

6                   MR. HIGA: I guess the question then is  
7           if on submitting a title 24 report prior to that  
8           date, and I'm pretty sure that there's some  
9           equipment out there that's been manufactured  
10          before that date, but still available when my  
11          project is being constructed, say several months  
12          later, you know, how do we deal with that?

13                   One of the reasons I ask for that  
14          interpretation specifically for us is that for DSM  
15          programs we are, for 2001 we'll have a program, we  
16          hope, it's not approved, but we anticipate it is,  
17          as well as all the other utilities, and they're  
18          based on surpassing the 1998 title 24 standards.

19                   And the question is how long will we be  
20          able to offer that program into 2001? So it's a  
21          dual-pronged question. One is for standard new  
22          building --

23                   MR. ELEY: I understand your question,  
24          and I must say, Randall, that we haven't thought  
25          about it. Or at least I haven't thought about it.

1 I think there's some questions about when you  
2 would use the whole building performance method,  
3 and which number would be used for your budget  
4 building.

5 I think we need to think that through  
6 and --

7 MR. HIGA: Okay, but that -- okay, so --

8 MR. ELEY: Glad to get your input on  
9 that.

10 MR. HIGA: Okay, yeah. We'd certainly  
11 like to provide input on that. And I'm sure the  
12 other utilities, also, with respect to the DSM  
13 programs.

14 MR. PENNINGTON: This is kind of a  
15 sticky question you're asking, because essentially  
16 California's preempted from imposing the new  
17 standards until they become effective in 90.1.

18 MR. ELEY: We have to be consistent.

19 MR. HIGA: Right, right, no, I  
20 understand the dilemma. I'm just wondering how  
21 that was going to be addressed. So we  
22 appreciate --

23 MR. ELEY: It's a good question. I  
24 don't think we have an answer yet.

25 MR. HIGA: Okay.

1                   MR. ELEY: We'll work with you to get  
2                   one.

3                   MR. HIGA: Okay, yeah, we appreciate you  
4                   considering it, and moving forward on that one.

5                   I think that answers everything on  
6                   equipment then.

7                   I'll move to cool roofs. I guess the  
8                   first question as I read through this, what was  
9                   the draft, and it stated that cool roofs can only  
10                  be traded off with other heat gain items.

11                  However, in the presentation today it  
12                  said it could be traded off with anything.

13                  Our comment was that we feel that should  
14                  be traded off with anything, and I wasn't sure why  
15                  it was just limited to cooling only, especially if  
16                  part of what we're trying to do is reduce overall  
17                  cooling.

18                  MR. ELEY: If you use the whole building  
19                  performance method, you can trade it off against  
20                  anything.

21                  The limited tradeoff only applies to  
22                  those equations that are part of section 143. And  
23                  these only allow you to do tradeoffs within the  
24                  building envelope, itself. Not lighting or HVAC.

25                  And there, since cool roofs mainly

1        impact cooling loads and not heating loads,  
2        there's two terms in that equation. There's the  
3        heating load term and the cooling load term. And  
4        the cool roof credit is only added to the cooling  
5        load term, not the heating load term. That's what  
6        we're saying here.

7                MR. HIGA: Okay, but so does that mean  
8        that if you do the whole building approach you can  
9        trade it off with any --

10               MR. ELEY: Yes.

11               MR. HIGA: Okay.

12               MR. ELEY: If you use the whole building  
13        approach --

14               MR. HIGA: Right.

15               MR. ELEY: -- there's no limits.

16               MR. HIGA: Okay. Maybe just as a  
17        general comment for that entire section. It may  
18        be worthwhile to clarify some of the explanations.  
19        That's one.

20               The other one that I had was with  
21        respect to the difference between solar  
22        absorptance reflectivity versus the thermal or  
23        long wave or black body emittance.

24               In a casual look-over of that, I think  
25        it can be confusing a bit, in terms of which

1 factor is which. And I think in terms of -- it's  
2 more of an implementation issue, especially out in  
3 the field, I think where that confusion may come  
4 about.

5 The other thing is sort of an inquiry  
6 about, is in the realm of technical purity. Right  
7 now, I mean the inputs, at least in the ACM, are  
8 pretty basic. If it's a cool roof, you use this  
9 number. If it's not, you use another number.

10 In the research and studies that I've  
11 done over the years, the amount of heat gain is  
12 very sensitive to the emissivity, long wave, black  
13 body thermal emissivity or emittance. And it  
14 seems to me that the model should be taking that  
15 into better account.

16 Right now it appears as though it's only  
17 looking at solar absorptance with a maximum or  
18 minimum emittance of .70 I guess it is, --

19 MR. ELEY: 75.

20 MR. HIGA: -- 75. And I was wondering  
21 if that's going to be either this go-round or in  
22 the future, if that's something that can be  
23 addressed.

24 MR. ELEY: The reason we have it the way  
25 we do is that reflectivity can be -- is kind of a

1 continuous number, you know. You can have roof  
2 coatings with .556, a 657, but with emissivity the  
3 surface is either metallic or it's not metallic.  
4 And if it's not metallic, it's .8 or greater. And  
5 if it's metallic it's .3 or less.

6 So, we just decided, for a matter of  
7 simplicity, to make that a binary or yes/no kind  
8 of thing. And not make it a continuous thing.  
9 That was just a call on our part.

10 MR. HIGA: Yeah. I was looking at  
11 several tables and it had that trend, but I did  
12 see a lot of intermediate numbers, and so that's  
13 why I made the comment, and was wondering if that  
14 would be included in the future.

15 I think those were the extent of my  
16 comments on cool roofs.

17 PRESIDING MEMBER PERNELL: Okay, thank  
18 you.

19 MS. SHAPIRO: Mr. Ahmed doesn't have  
20 anything?

21 MR. HIGA: Okay, I guess that's it.

22 MS. SHAPIRO: Thank you. Dee Anne,  
23 thank you for waiting so patiently. But this is a  
24 punishment for turning in your card so late.

25 PRESIDING MEMBER PERNELL: Now, Randall,

1       for some of those clarification points are you  
2       going to get with staff?

3               MR. HIGA:   Yes.

4               PRESIDING MEMBER PERNELL:   Maybe not  
5       today, but whenever you guys can.

6               MR. PENNINGTON:   Yes, I'll do that.

7               MS. SHAPIRO:   Ms. Ross.

8               MS. ROSS:     I'm Dee Anne Ross of  
9       DAREnergy Consulting.   And I'm representing  
10      Superior Radiant Insulation.   And the reason I was  
11      so late is I wasn't sure if staff was going to  
12      'fess up to this issue or not, so I have to bring  
13      it up.

14              Given my experience with this process,  
15      as Rosella knows, I did my best to submit a  
16      proposal to consider the value of radiant foil  
17      insulation in the building envelope calculations.

18              And I submitted my request in the form  
19      of a letter, actually Len Zola of Superior Radiant  
20      Insulation submitted it, and I was here at the  
21      September 25th meeting and made comments about it,  
22      also.

23              Basically we wanted consideration for  
24      the benefit.   It affects the peak performance  
25      because it provides a different benefit.   It's a

1 radiant insulation and so it provides a benefit in  
2 the summer that normal mass insulation doesn't  
3 provide.

4 And that's reflected in an R value  
5 that's two to three times higher for the summer  
6 value than for the winter.

7 And I thought it was going to be  
8 included, but it's not. So I just wanted to make  
9 one last attempt to get it included.

10 I understand that there are some  
11 modeling issues that I wasn't aware of that in the  
12 performance approach there's no way to modify the  
13 envelope calculations. There's only room for one  
14 U value or R value.

15 And so one suggestion that was provided  
16 to me was possibly offering the same credit as is  
17 given for cool roofs to a building with radiant  
18 foil insulation. And this would be a conservative  
19 assumption, actually.

20 If you look at the energy savings from  
21 radiant barriers and the energy savings from cool  
22 roofs, the radiant barrier actually provides more  
23 benefit, provides benefit in the summer and in the  
24 winter. And the radiant foil insulation is a  
25 little bit similar, it's not exactly the same.



1 But it would be along the same lines.

2 So that would be maybe a potential  
3 provision is that a radiant foil insulation would  
4 get the same credit as a cool roof.

5 And I know, I'm just making a last ditch  
6 attempt. Like I say, I'm very familiar with the  
7 process. I know I would not want to be one of  
8 those people who wants an idea at the last minute  
9 slipped in. I tried. Yes, I tried. But, anyway,  
10 so that's my attempt.

11 MS. SHAPIRO: But that's just a new idea  
12 to give it the cool roof value, isn't it?

13 MS. ROSS: That's true.

14 PRESIDING MEMBER PERNELL: And this is -  
15 - what type of insulation?

16 MS. ROSS: It's a radiant foil  
17 insulation. So it provides, it doesn't have a lot  
18 of R value. It's actually like -- one of their  
19 best selling products has about a 12 R value. But  
20 then they measure the insulation -- it's reflected  
21 in an R value, although it's not really an R  
22 value. But the benefit, that's the only way they  
23 can measure it.

24 So the benefit in the summer is  
25 reflected as an R value that's higher, because

1       it's got a foil that stops the heat from getting  
2       into the ceiling.

3               MS. SHAPIRO: Thank you, Ms. Ross. Oh,  
4       we have one other person who doesn't have a card.

5               MR. BENNEY: That's correct.

6               MS. SHAPIRO: Should we let him in?

7               PRESIDING MEMBER PERNELL: Sure.

8               MR. BENNEY: I actually would like to  
9       just respond to staff comment, if I could --

10              MS. SHAPIRO: Sure.

11              MR. BENNEY: -- Bill's comment.

12              MS. SHAPIRO: Identify yourself.

13              MR. BENNEY: My name is Jim Benney; I'm  
14       with the National Fenestration Rating Council.  
15       This concerns the feasibility of a sunset on the  
16       default ratings, or for not using NFRC  
17       certification labeling.

18              Bill's concern about cost really isn't  
19       necessary. When we did the cost analysis and  
20       number crunching for CEC for certification  
21       labeling costs, we assumed worst case. In other  
22       words what we estimated was that every time a  
23       project was glazed, a manufacturer or curtain wall  
24       contractor would have to do testing and  
25       simulation.

1                   With the implementation of this in the  
2                   code, what we would have is a database or a  
3                   library of actually certified products that  
4                   contractors could then use on new buildings.  
5                   Therefore they would not have to go through the  
6                   testing simulation all over again.

7                   So, costs would go down dramatically, as  
8                   more and more of these products go into the  
9                   database.

10                  Thank you.

11                  PRESIDING MEMBER PERNELL:   Okay, thank  
12                  you.

13                  MS. SHAPIRO:   Thank you very much.

14                  MR. PENNINGTON:   Thank you.   Doesn't  
15                  help me much, but --

16                  MS. SHAPIRO:   Well, it helps some.

17                  PRESIDING MEMBER PERNELL:   No more  
18                  cards?

19                  MS. SHAPIRO:   No more cards.   No more --  
20                  what, Gary?   No.

21                  PRESIDING MEMBER PERNELL:   Okay, we're  
22                  not totally done, so don't get up and run.

23                  MS. SHAPIRO:   Dave Ware and Gary, both.  
24                  Let Dave -- Dave got his hand up first.   Mr. Ware,  
25                  get up here and be fast.

1                   He did have his hand up first. Then  
2 Gary had his hand up.

3                   PRESIDING MEMBER PERNELL: All right.  
4 Is there anyone else want to speak to us on the  
5 standards before we move on to the environmental  
6 analysis?

7                   Okay.

8                   MR. WARE: Thank you, Dave Ware,  
9 representing Owens Corning.

10                  I actually did have a card in on  
11 nonresidential, and my letter did have a --

12                  MS. SHAPIRO: Oh, I'm sorry.

13                  MR. WARE: -- comment in regards to the  
14 nonresidential standards.

15                  And it's more of a question. But it  
16 relates to the overall projected energy savings of  
17 the proposed revisions from the contractors. And  
18 in particular at the September 25th staff workshop  
19 it was identified by the group and by staff that  
20 the ASHRAE tier 2 measures were on the table for  
21 investigation for their appropriateness for these  
22 revisions.

23                  And so my question is why didn't, and I  
24 can anticipate the answer, but why didn't the  
25 contractor include the ASHRAE 90.1 tier 2 proposed

1 measures for insulation and duct R values and  
2 things of that sort?

3 Those things were deemed by ASHRAE,  
4 under that tier 2 analysis process, to be cost  
5 effective. And indeed, if they were included,  
6 albeit the time necessary, the overall projected  
7 energy savings for the nonresidential standards  
8 would have been possibly significantly more than  
9 currently projected.

10 PRESIDING MEMBER PERNELL: Okay, we have  
11 an answer?

12 MR. ELEY: Well, for fenestration we're  
13 beyond ASHRAE tier 2.

14 MR. WARE: I understand that.

15 MR. ELEY: And for insulation levels  
16 we've never looked at it. I think it's just a  
17 matter of priorities. We were trying to focus on  
18 what would affect peak loads and fenestration's  
19 got a bigger impact on peak loads than insulation.

20 I think we do need to look at it,  
21 though, Dave. And I think the numbers will come  
22 out close to ASHRAE tier 2.

23 MR. WARE: I think they would, too. And  
24 I was searching your volumes of reports, like  
25 others, for various things. And all I was looking

1       for was an answer to that question. We didn't  
2       look at it for whatever reason, but --

3               MR. ELEY: The only insulation levels we  
4       looked at were very limited. We moved climate  
5       zones 2 and 10 in with the central valley. So we  
6       had to justify a little bit more stringent wall  
7       and roof insulation for climates there. That was  
8       the only thing we did on insulation --

9               MR. MODERA: Actually there is one other  
10      things, and I didn't explain it earlier. This is  
11      Mark Modera again.

12              In the duct efficiency calculations you  
13      actually can get a credit for ducts inside that  
14      space, for adding duct insulation. That is in  
15      there. I explained it in terms of sealing, I was  
16      trying to go quickly. But there are only two  
17      things that are left in there --

18              MR. WARE: I picked that up. I don't  
19      know what the magnitude of that is, but there was  
20      an anticipation from the 25th workshop that there  
21      at least may be on the table more larger scope  
22      ASHRAE tier 2 analysis, and I was just looking for  
23      an answer to that. So, okay, thank you.

24              PRESIDING MEMBER PERNELL: Okay. Thank  
25      you.

1                   MR. FARBER: Gary Farber with CABEC  
2                   again. Appreciate you giving me a couple more  
3                   minutes.

4                   I realize I missed one issue and I  
5                   wanted to ask a question and get a clarification  
6                   on the fenestration issue.

7                   One other, I think, simple fix would be  
8                   right now with commercial buildings I think we're  
9                   often seeing at least the smaller commercial  
10                  buildings using electric storage water heaters  
11                  just because it's cheap to install.

12                  And right now there's no requirement  
13                  that there be any calculation. And I would like  
14                  to suggest that electric storage water heating not  
15                  be allowed under the prescriptive method. And  
16                  that under performance method it be calculated  
17                  against a standard based on a gas storage system,  
18                  such as we do in residential.

19                  And it would be an easy fix. It  
20                  wouldn't require any new inventions.

21                  On the fenestration, if I could ask a  
22                  question. I believe, Charles, that I read that  
23                  the high rise residential fenestration did not  
24                  account for reflective products, but the  
25                  nonresidential did, is that correct?

1                   MR. ELEY: That's correct. Now, I think  
2 I know where you're going with this.

3                   MR. FARBER: Well, I'm wondering about  
4 the values, because I've seen the values are real  
5 low and I want --

6                   MR. ELEY: Yeah, --

7                   PRESIDING MEMBER PERNELL: Well,  
8 wherever it's at, we've got to hurry up, so --

9                   MR. FARBER: Okay, okay.

10                  (Laughter.)

11                  PRESIDING MEMBER PERNELL: -- if you've  
12 got a question?

13                  MR. FARBER: These low values are based  
14 on what type of construction?

15                  MR. ELEY: The lower value would be for  
16 residential would be tinted glass, possibly high  
17 performance tinted glass like AzurLite, in  
18 combination with sunbelt low E or super low E  
19 coating.

20                  MR. FARBER: I see.

21                  MR. ELEY: Those will get you down to  
22 about .2126, and that's as low as we go --

23                  MR. FARBER: Okay.

24                  MR. ELEY: -- for nonres -- for  
25 residential.



1                   MR. FARBER: Thanks. The clarification  
2                   I want to make on my earlier comments, CABEC's  
3                   concerns on these solar heat gain, we certainly  
4                   are all for saving energy, but we have to  
5                   recognize that there's always a tradeoff of low  
6                   solar heat gain coefficients. That if there is  
7                   mechanical cooling, of course, it will reduce  
8                   cooling loads, and save energy there.

9                   But it's also going to mean less solar  
10                  heat gain in the winter, and increase gas usage.  
11                  And gas rates are expected to rise significantly  
12                  next year.

13                 And so, again, my comments are buildings  
14                 without any air conditioning at all, I think we  
15                 really need to relook at that issue.

16                 Thank you very much.

17                 MS. SHAPIRO: Thank you.

18                 PRESIDING MEMBER PERNELL: Thank you.

19                 Yes.

20                 MR. HIGA: Randall Higa, Southern  
21                 California Gas Company. I'm not sure how close to  
22                 wrapping up you are, but we had a question in  
23                 terms of timeline for written comments.

24                 PRESIDING MEMBER PERNELL: For what?

25                 MS. SHAPIRO: Written comments.

1                   MR. HIGA: For written comments. Is  
2 there a timeframe you have?

3                   PRESIDING MEMBER PERNELL: Friday.

4                   MR. HIGA: This --

5                   MS. SHAPIRO: December 1st.

6                   PRESIDING MEMBER PERNELL: December 1st.

7                   MR. HIGA: Is there any way that we can  
8 get at least another week to put together comments  
9 on that?

10                  MR. RATLIFF: Your comments are, in  
11 fact, timely under the APA until the adoption  
12 occurs. And the adoption hearing, I'm told, is in  
13 January, is that right, January 3rd.

14                  So you can comment at anytime up to  
15 there. I think staff would like to have the  
16 comments earlier than that, so --

17                  MS. SHAPIRO: The Committee would like  
18 to have the comments earlier than that.

19                  MR. PENNINGTON: The Committee's going  
20 to have -- this is in your closing comments, but  
21 the Committee's going to have to make a decision  
22 about what to propose for the full Commission.

23                  So if you want you comments to affect  
24 what the Committee's going to propose, then  
25 Friday.

1                   MR. RATLIFF: That's right. I mean in  
2 terms of what the Committee proposes, it's  
3 obviously going to have to be earlier. In terms  
4 of what the Commission adopts, your comments are  
5 timely up until the adoption.

6                   MS. SHAPIRO: You could comment right in  
7 the business meeting. You know, when the  
8 Commission considers that.

9                   MR. HIGA: Yeah. Okay.

10                  PRESIDING MEMBER PERNELL: All right.  
11 Let me do this before we get into that discussion,  
12 because before this meeting is over we're going to  
13 talk about next steps. And next steps will tell  
14 you when your comments are due, and when we're  
15 going to adopt, and et cetera.

16                  Right now I want to move to the  
17 environmental analysis of the proposed standards.

18                  MR. PENNINGTON: Tony Rygg is the  
19 Project Manager on the environmental analysis and  
20 will present that.

21                  PRESIDING MEMBER PERNELL: Are we ready?

22                  MR. RYGG: Yes. In the interest of  
23 brevity I'll offer that the analytical methods and  
24 assumptions that were used are all included in the  
25 initial study.

1                   And cutting quickly, the results of that  
2                   analysis are on table 1 of page 6 of the initial  
3                   study. And considering all the features and  
4                   proposed amendments that are being offered in this  
5                   forum, there's a net reduction in emissions for  
6                   both NOx and PM10 statewide. And that's not  
7                   taking credit for the fact that a lot of  
8                   generation is out of state, may be out of state.

9                   And there's also a net benefit in all  
10                  air basins with one small exception. And the  
11                  small exception is the result of what Gary Farber  
12                  was referring to, possibility of increased gas  
13                  combustion in some areas as a result of reduced  
14                  solar heat gain in the winter.

15                 And that one air basin that had a small  
16                 impact was Lake County Air Basin. Lake County Air  
17                 Basin is the only basin in the state that is in  
18                 attainment for all criteria pollutants. And the  
19                 magnitude of the impact was on the order of a few  
20                 pounds per year.

21                 And I compared that to the inventory  
22                 numbers, and numbers for these particular  
23                 pollutants, NOx and PM10, are in the orders of  
24                 hundreds of pounds a day. So, it was our call  
25                 that it was microscopic and probably in the

1 background noise level of impact in Lake County.

2 Consequently, we have a no significant  
3 impact result as a result of these measures.

4 MR. PENNINGTON: We consulted with the  
5 Administrator of Lake County's Air Quality  
6 District, and we couldn't get him to stop  
7 laughing --

8 (Laughter.)

9 MR. PENNINGTON: -- about our impact in  
10 his climate.

11 PRESIDING MEMBER PERNELL: So is it fair  
12 to say that there's no significant environmental  
13 impact as a result of the standards?

14 MR. PENNINGTON: Yes.

15 MR. RYGG: Correct.

16 MR. PENNINGTON: One thing that is  
17 important to note, though, is that we were  
18 concerned about this. That by improving the solar  
19 heat gain coefficient of windows we might very  
20 well reduce the solar heat gain in the wintertime.  
21 And that that might create an emissions increase  
22 in various zones.

23 And what was the mitigating factors were  
24 that on the residential side was the duct sealing  
25 measure. And on the nonresidential side was the

1 double glazing measure, and some HVAC  
2 improvements, as well, related to gas heating and  
3 water heating.

4 If the Commission was to consider the  
5 recommendations for removing duct sealing as a  
6 measure, we might very well find ourselves with an  
7 environmental impact that we'd, you know, be in a  
8 position that we'd have to deal with.

9 So that is a concern for any positive  
10 support for that recommendation to remove duct  
11 sealing.

12 PRESIDING MEMBER PERNELL: Okay. Is  
13 there anyone from the public who wants to speak on  
14 the environmental analysis that we've just heard?  
15 Anyone from the public? Any cards?

16 MS. SHAPIRO: No.

17 MR. PENNINGTON: Let me just say that  
18 this is an official environmental analysis that  
19 we're doing, that we're required to do in order  
20 for the Commission to adopt the standards. And  
21 with its release, it started a 30-day public  
22 comment period. And that 30-day period is the  
23 middle of December when comments are due.

24 So this satisfies our legal requirement  
25 for that.

1                   PRESIDING MEMBER PERNELL: Okay. And  
2                   there's no one who wants to speak on the  
3                   environmental analysis.

4                   We'll go to next steps. Before I close  
5                   the hearing -- first of all, I'd like to say that  
6                   all of the comments will be taken into  
7                   consideration when staff reviews the transcripts  
8                   and works with the various contractors to  
9                   incorporate some of the suggestions.

10                  We talked a little bit about additional  
11                  written comments. What we are suggesting here is  
12                  that Friday, December 1st, to have your written  
13                  comments. What I'm told is that's not necessarily  
14                  a drop-dead date, but if you want them included  
15                  and to have staff analyze them, I would suggest  
16                  that you try and get them in by December 1st,  
17                  Friday, December 1st, before close of business.

18                  Also, the full Commission will have a  
19                  special business meeting on January 3rd at 10:00  
20                  to adopt AB-970 building standards. And that  
21                  adoption will be within 120 days, as mandated by  
22                  the statute.

23                  And the Committee intends to publicly  
24                  release the proposed standards December 12th.

25                  MS. SHAPIRO: That's our proposal,

1 December 12th.

2 PRESIDING MEMBER PERNELL: Right, that's  
3 our proposed standard. And also I want to comment  
4 on the ACM manual. Amendments to the manual  
5 January 3rd, and the approval of the ACM manual by  
6 February 7, 2001.

7 Are there any questions on any of the  
8 next steps or time tables or dates? Also, this  
9 will be posted on the website; on the Energy  
10 Commission's website, if there's additional  
11 questions.

12 Is there anything else to come before  
13 this Committee? Yes, ma'am?

14 MS. ROSS: I just wanted to know if you  
15 have thought about the implementation date? Or is  
16 that something you're going to consider, given the  
17 comments here today?

18 PRESIDING MEMBER PERNELL: We have  
19 thought about the implementation date, but we  
20 haven't decided on that. We wanted to get the  
21 comments, get feedback, have staff analyze those  
22 comments, and then come up with a date.

23 Again, that date will be posted on the  
24 website when the Committee comes up with the date  
25 that we think is appropriate.



1 Any other questions?

2 Seeing none, hearing none, this

3 Committee hearing is adjourned.

4 (Whereupon, at 5:15 p.m., the hearing  
5 was adjourned.)

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## CERTIFICATE OF REPORTER

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